

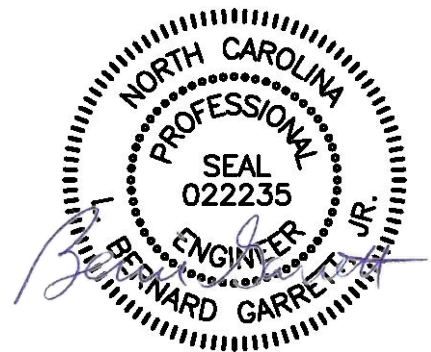
PROJECT MANUAL



catawba county
MAKING. LIVING. BETTER.

BLACKBURN RESOURCE RECOVERY FACILITY WASTE PROCESSING FACILITY PROJECT BID NO. 25-1020

JUNE 2025



GARRETT & MOORE, INC.
1029 WEST SOUTH ST
RALEIGH, NORTH CAROLINA 27603
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05/29/25

**Blackburn Resource Recovery Facility
Waste Processing Facility Project**

TABLE OF CONTENTS

SECTION SUBJECT

DIVISION 0 – BIDDING AND CONTRACT DOCUMENTS

C-003	Table of Contents
C-111	Advertisement for Bids
C-200	Instructions to Bidders
C-410	Bid Form
C-430	Bid Bond
C-451	Qualifications Statement
C-510	Notice of Award
C-550	Notice to Proceed
C-610	Performance Bond
C-615	Payment Bond
C-625	Certificate of Substantial Completion
C-626	Notice of Acceptability of Work
County	Construction Contract
County	General Conditions of the Contract for Construction
County	Rules Implementing Mediated Settlement Conferences in Catawba County
County	Catawba County Contractor Safety Guidebook
C-850	Drawing Index
C-900	Addendum

DIVISION 1 – GENERAL REQUIREMENTS

01010	Summary of Work
01025	Measurement and Payment
01026	Schedule of Values
01027	Application for Payment
01030	Special Project Procedures
01036	Change Order Procedures
01050	Field Engineering
01200	Project Meetings
01310	Construction Schedules
01340	Shop Drawings, Product Data, Working Drawings, and Samples
01380	Construction Photographs
01510	Temporary Utilities
01590	Field Offices
01600	Material and Equipment

**TABLE OF CONTENTS
(CONTINUED)**

<u>SECTION</u>	<u>SUBJECT</u>
01630	Substitutions and Product Options
01700	Contract Closeout
01720	Project Record Documents
01740	Warranties and Bonds

DIVISION 2 – SITE WORK

02100	Site Preparation
02200	Excavation, Backfill, and Compaction
02272	Filter Fabric
02505	Crushed Stone Paving
02510	Paving and Surfacing
02605	Precast Concrete Structures
02612	Reinforced Concrete Pipe

DIVISION 3 – CONCRETE

03301	Concrete and Reinforcing Steel
-------	--------------------------------

DIVISION 9 – FINISHES

09901	Surface Preparation and Shop Prime Painting
09902	Painting

DIVISION 10 – SPECIALTIES

10880	Truck Scale and Appurtenances
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END OF SECTION

ADVERTISEMENT FOR BIDS

BID NO. 25-1020

CATAWBA COUNTY
BLACKBURN RESOURCE RECOVERY FACILITY
WASTE PROCESSING FACILITY PROJECT
ISSUED: June 2, 2025

Sealed Bids for the **Blackburn Resource Recovery Facility Waste Processing Facility Project** will be received, by **Catawba County**, in the **2nd floor meeting room, Government Center, located at 25 Government Drive, Newton, North Carolina 28658**, until **3:00 PM** local time on **July 8, 2025**, at which time the Bids which have been duly received will be **publicly** opened and read. The Project consists of the completion of advance sitework and relocation of the Treatment and Processing Facility at the Blackburn Resource Recovery Facility located at 3776 Rocky Ford Road, Newton, North Carolina, 28658.

A mandatory pre-bid conference will be held at 10:00 AM local time on **June 17, 2025**, at the **Blackburn Landfill Administrative Building, 4017 Rocky Ford Road, Newton, North Carolina 28658**. Bids will not be accepted from Bidders who do not attend the mandatory pre-bid conference. The purpose of the mandatory conference and site visit is for prospective Contractors to apprise themselves of the conditions and requirements that will affect the performance of work called for in the Bid Documents. Any Bidders who are not present by 10:00 AM will not be able to participate in the pre-bid conference.

Bids will be received for a single prime Contract. Bids shall be on a lump sum and unit price basis as indicated in the Bid Form.

Bidding Documents will be available for inspection, **by appointment**, at the Catawba County Purchasing Department, 25 Government Drive, Newton, North Carolina 28658, Phone: 828-465-8224.

Bidding Documents may be downloaded from the following designated County website at no charge:

<https://www.catawbacountync.gov/county-services/purchasing/bid-notice/>

This website will be updated periodically with addenda and other information relevant to submitting a Bid for the Project. All official notifications, addenda, and other Bidding Documents will be offered only as detailed in this Advertisement. Neither Owner nor Engineer will be responsible for Bidding Documents, including addenda, if any, obtained from sources other than the methods listed herein.

The table below shows the *intended* bid schedule for this Project. Owner will make every effort to adhere to this schedule:

Event	Responsibility	Date and Time
Advertisement Issued	Owner	June 2, 2025
Pre-Bid Conference	Owner/Contractor	June 17, 2025 at 10:00 AM
Submit Written Questions	Contractor	June 24, 2025 at 5:00 AM
Provide Responses to Questions	Owner	June 27, 2025 at 5:00 AM
Bid Opening	Contractor	July 8, 2025 at 3:00 PM
Contract Award	Owner	TBA

Contract Effective Date	Owner	Upon Execution
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If submitting Bid by mail, the Bid must be submitted in a sealed envelope, plainly marked on the outside as described in the Instructions for Bidders, and mailed to the address shown below:

Mailing address for delivery of bid via US Postal Service	Office Address of delivery by any other method (hand delivery, overnight, or any other carrier)
Catawba County Government Center Attn: Purchasing Department Post Office Box 389 Newton, North Carolina 28658	Catawba County Government Center Attn: Purchasing Department 25 Government Drive Newton, North Carolina 28658

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

Bid security shall be furnished in accordance with the Instructions to Bidders.

Bidders shall submit proof of qualifications to perform the Work as described in the Instructions to Bidders.

All bidders are hereby notified that they must be properly licensed under the state laws governing their prospective trades. Bidders are also notified that applicable provisions of Chapter 87 of the General Statutes of the State of North Carolina shall be observed in the receiving of bids and awarding of contracts for the Work.

Project shall be completed within 210 Calendar Days after issuance of a Notice to Proceed.

Catawba County reserves the right to reject any and all bids and to waive informalities as may be permitted by law.

The County reserves the right to postpone bid openings for its own convenience. Please check the designated County website for details.

END OF ADVERTISEMENT FOR BIDS

INSTRUCTIONS TO BIDDERS FOR CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 1— Defined Terms.....	1
Article 2— Bidding Documents.....	1
Article 3— Qualifications of Bidders.....	2
Article 4— Pre-Bid Conference	3
Article 5— Site and Other Areas; Existing Site Conditions; Examination of Site; Owner’s Safety Program; Other Work at the Site.....	3
Article 6— Bidder’s Representations and Certifications	5
Article 7— Interpretations and Addenda	5
Article 8— Bid Security	5
Article 9— Contract Times	6
Article 10— Substitute and “Or Equal” Items.....	6
Article 11— Subcontractors, Suppliers, and Others	6
Article 12— Preparation of Bid	7
Article 13— Basis of Bid	8
Article 14— Submittal of Bid.....	8
Article 15— Modification and Withdrawal of Bid.....	8
Article 16— Opening of Bids	9
Article 17— Bids to Remain Subject to Acceptance	9
Article 18— Evaluation of Bids and Award of Contract	9
Article 19— Bonds and Insurance.....	10
Article 20— Signing of Agreement.....	10
Article 21— Sales and Use Taxes	10

ARTICLE 1—DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions of the Contract for Construction. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. *Issuing Office*—The office from which the Bidding Documents are to be issued, and which registers plan holders.

ARTICLE 2—BIDDING DOCUMENTS

- 2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.
- 2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.

Owner has designated a Bidding Documents Website as indicated in the Advertisement for Bids, found at <https://www.catawbacountync.gov/county-services/purchasing/bid-notice/>. Bidders may rely that sets of Bidding Documents obtained from the Bidding Documents Website are complete, unless an omission is blatant. The Bidding Documents Website will be updated periodically with addenda and other information relevant to submitting a Bid for the Project.

2.03 *Electronic Documents*

- A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.
1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf). It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.
- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.03 above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and

responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

- C. After the Contract is awarded, the Owner will provide or direct the Engineer to provide for the use of the Contractor documents that were developed by Engineer as part of the Project design process, as Electronic Documents in native file formats.
 - 1. Electronic Documents that are available in native file format include:
 - a. CADD files for use by the Contractor in .dwg or .dxf format. The specific list will be available upon completion of the final construction plans.
 - 2. Release of such documents will be solely for the convenience of the Contractor. No such document is a Contract Document.
 - 3. Unless the Contract Documents explicitly identify that such information will be available to the Successful Bidder (Contractor), nothing herein will create an obligation on the part of the Owner or Engineer to provide or create such information, and the Contractor is not entitled to rely on the availability of such information in the preparation of its Bid or pricing of the Work. In all cases, the Contractor shall take appropriate measures to verify that any electronic/digital information provided in Electronic Documents is appropriate and adequate for the Contractor's specific purposes.
 - 4. In no case will the Contractor be entitled to additional compensation or time for completion due to any differences between the actual Contract Documents and any related document in native file format.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

- 3.01 Bidder is to submit the following information with its Bid to demonstrate Bidder's qualifications to perform the Work:
 - A. Completed Qualifications Statement C-451.
 - B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.
 - C. Bidder's state or other contractor license number, if applicable.
 - D. Subcontractor and Supplier qualification information.
 - E. Other required information regarding qualifications.
- 3.02 *A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.*
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4—PRE-BID CONFERENCE

A Mandatory Pre-Bid Conference will be held at 10:00 AM on June 17, 2025, at the Blackburn Resource Recovery Facility, 4017 Rocky Ford Road, Newton, North Carolina, 28658. This Pre-Bid Conference will meet at the front of the administration building at that location. The purpose of this visit is for prospective Bidders to apprise themselves with the site conditions and requirements which will affect the performance of work called for in the Advertisement for Bids.

ARTICLE 5—SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

5.01 *Site and Other Areas*

- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

5.02 *Existing Site Conditions*

A. *Subsurface and Physical Conditions; Hazardous Environmental Conditions*

1. The General Conditions identify the following regarding existing conditions at or adjacent to the Site:
 - a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.
 - b. Those drawings known to Owner of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.
 - c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
 - d. Technical Data contained in such reports and drawings.
2. Owner will make electronic copies in .pdf format of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the Construction Contract. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

5.03 *Other Site-related Documents*

A. In addition to the documents regarding existing Site conditions referred to in Paragraph 5.02.A, the following other documents relating to conditions at or adjacent to the Site are known to Owner and made available to Bidders for reference:

1. Geotechnical Data – Blackburn Resource Recovery Facility – Waste Processing Facility Project – May 2025

Owner will make copies of these other Site-related documents available to any Bidder on request.

- B. Owner has not verified the contents of these other Site-related documents, and Bidder may not rely on the accuracy of any data or information in such documents. Bidder is responsible for any interpretation or conclusion Bidder draws from the other Site-related documents.
- C. The other Site-related documents are not part of the Contract Documents.
- D. Bidders are encouraged to review the other Site-related documents, but Bidders will not be held accountable for any data or information in such documents. The requirement to review and take responsibility for documentary Site information is limited to information in (1) the Contract Documents and (2) the Technical Data.
- E. No other Site-related documents are available.

5.04 *Site Visit and Testing by Bidders*

- A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. During the visit the Bidder must not disturb any ongoing operations at the Site.
- B. A Mandatory Pre-Bid Site Visit will be held at 10:00 AM on June 17, 2025, at the Blackburn Resource Recovery Facility, 4017 Rocky Ford Road, Newton, North Carolina, 28658.
- C. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- D. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.
- E. Bidder must comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- F. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.05 *Owner's Safety Program*

- A. Site visits and work at the Site are governed by the General Conditions and Owner's Contractor Safety Guidelines.

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

- A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.
- B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7—INTERPRETATIONS AND ADDENDA

- 7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.
- 7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information and submittal procedures for such questions are as follows:
 - A. Written questions shall be emailed to Bernie Garrett at bgarrett@garrett-moore.com. Bidder should enter "Bid No: 25-1020 – Questions" as the subject for the email.
- 7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all registered plan holders. Questions received less than eight days prior to the date for opening of Bids may not be answered.
- 7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8—BID SECURITY

- 8.01 Each Bid must be accompanied by bid security made payable to Owner in an amount of five percent (5%) of the Bidder's Bid Price and in the form of cash, cashier's check certified check on some bank or trust company insured by the Federal Deposit Insurance Corporation, or a bid bond issued by a surety meeting the requirements of the Owner. The Owner will only select one Bid for contract award.
- 8.02 All Bid Securities except those of the three lowest responsible and eligible Bidders will be returned within five days, Saturdays, Sundays, and legal holidays excluded, after opening of the Bids. All Bid Securities will be returned on the execution of the Agreement or if no award is made, within thirty days, excluding Saturdays, Sundays and legal holidays after the actual date of opening of the Bids, unless forfeited under the conditions herein stipulated.

- 8.03 In case a party to whom a Contract is awarded shall fail or neglect to execute the Agreement and furnish the satisfactory bonds within the time specified, Owner may determine that the Bidder has abandoned the Contract, and thereupon the Bid Forms and acceptance shall be null and void and the Bid Security accompanying the Bid Form shall be forfeited to Owner as liquidated damages for such failure or neglect and to indemnify said Owner for any loss which may be sustained by failure of the Bidder to execute the Agreement and furnish the bonds as aforesaid, provided that the amount forfeited to Owner shall not exceed the difference between the Bid Price of said Bidder and that of the next lowest responsible and eligible bidder and provided further that, in case of death, disability, or other unforeseen circumstances affecting the Bidder, such Bid Security may be returned to the Bidder. After execution of the Agreement and acceptance of the bonds by Owner, the Bid Security accompanying the Bid Form of the Successful Bidder will be returned
- 8.04 The bid bond shall be issued by a company authorized to do business by the North Carolina Department of Insurance and having a Registered Agent in the State of North Carolina.

ARTICLE 9—CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Agreement.
- 9.02 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10—SUBSTITUTE AND “OR EQUAL” ITEMS

- 10.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or “or-equal” items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or “or-equal” item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.
- 10.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.01 The apparent Successful Bidder, and any other Bidder so requested, must submit to Owner a list of the Subcontractors or Suppliers proposed for the Work with the bid.
- 11.02 If requested by Owner, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent

Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

- 11.03 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer.

ARTICLE 12—PREPARATION OF BID

- 12.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
 - B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."
- 12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8½ inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.
- 12.03 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.
- 12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.
- 12.05 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.
- 12.06 A Bid by an individual must show the Bidder's name and official address.
- 12.07 A Bid by a joint venture must be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.
- 12.08 All names must be printed in ink below the signatures.
- 12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.

- 12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be shown.
- 12.11 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located.

ARTICLE 13—BASIS OF BID

13.01 *Unit Price*

- A. Bidders must submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
- B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity", which Owner or its representative has set forth in the Bid Form, for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 14—SUBMITTAL OF BID

- 14.01 The Bidding Documents include one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 2 of the Bid Form.
- 14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement for Bids and must be enclosed in a plainly marked package with the Project title, and, if applicable, the designated portion of the Project for which the Bid is submitted, the name and address of Bidder, and must be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside the name and address of the Bidder, Contractor's NC License number, the name of the project for which the bid is submitted and the date and time of opening. A mailed Bid must be addressed to the location designated in the Advertisement.
- 14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 15—MODIFICATION AND WITHDRAWAL OF BID

- 15.01 An unopened Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted

prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

- 15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 15.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, the Bidder will be disqualified from further bidding on the Work.

ARTICLE 16—OPENING OF BIDS

- 16.01 Bids will be opened at the time and place indicated in the Advertisement for Bids and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 17.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.
- 18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.
- 18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.
- 18.04 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.
- 18.05 *Evaluation of Bids*
- A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
 - B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form. To determine the Bid prices for purposes of comparison, Owner will announce to all bidders a “Base Bid plus alternates” budget after receiving all Bids, but prior to opening them. For comparison purposes alternates will be accepted, following the order of priority established in the Bid Form, until doing so would cause the budget to be exceeded. After

determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these Instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its additive alternate Bids for which Owner determines funds will be available at the time of award.

- C. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
- 18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 18.07 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 19—BONDS AND INSURANCE

- 19.01 The Contract sets forth Owner's requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by required bonds and insurance documentation.
- 19.02 Article 8, Bid Security, of these Instructions, addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 20—SIGNING OF AGREEMENT

- 20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and any bonds and insurance documentation required to be delivered by the Contract Documents to Owner. Within 10 days thereafter, Owner will deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents.

ARTICLE 21—SALES AND USE TAXES

- 21.01 Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

BID FORM FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders and the General Conditions.

ARTICLE 1—OWNER AND BIDDER

- 1.01 This Bid is submitted to:
Catawba County, 25 Government Drive, Newton, North Carolina 28658
For Blackburn Resource Recovery Facility Waste Processing Facility Project
- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

- 2.01 The following documents are submitted with and made a condition of this Bid:
 - A. Required Bid security;
 - B. List of Proposed Subcontractors;
 - C. List of Proposed Suppliers;
 - D. Evidence of authority to do business in the state of the Project;
 - E. Contractor's license number as evidence of Bidder's State Contractor's License;
 - F. Required Bidder Qualification Statement with supporting data; and

ARTICLE 3—BASIS OF BID—UNIT PRICES

- 3.01 *Unit Price Bids*
 - A. Bidder will perform the following Work at the indicated unit prices as shown on the Bid Form attached at the end of this section.
 - B. Bidder acknowledges that:
 1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and
 2. estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 4—TIME OF COMPLETION

- 4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with the Construction Contract on or before the dates or within the number of calendar days indicated in the Agreement.

4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER’S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

- A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

- A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

- A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder’s Representations*

- A. In submitting this Bid, Bidder represents the following:
1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
 2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Bidding Documents, if any, with respect to the Technical Data in such reports and drawings.
 5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Bidding Documents, with respect to Technical Data in such reports and drawings.
 6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Bidding Documents, if any, or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and

performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 6.02.A:
 - a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 - c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
 - d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

Bidder:

(typed or printed name of organization)

By:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

Address for giving notices:

Bidder's Contact:

Name:

(typed or printed)

Title:

(typed or printed)

Phone:

Email:

Address:

Bidder's Contractor License No.: (if applicable)

TABLE 1
Catawba County Waste Processing Facility Project

Bid Form

Item	Description	Quantity	Unit	Unit Price	Extended Total
1	Bonds, Mobilization and Insurance	1	LS		
2	Silt Fence	250	LF		
3	Construction Entrance	1	LS		
4	Skimmer Basin Outlet	1	LS		
5	Sediment Pond Riser Barrel	1	LS		
6	Porous Baffles	470	LF		
7	Grubbing/Stripping	6825	CY		
8	Excavation and Backfill	7200	CY		
9	Excavation and Stockpile	3900	CY		
10	Catch Basins	7	EA		
11	12-inch RCP	120	LF		
12	24-inch RCP	184	LF		
13	30-inch RCP	812	LF		
14	Asphalt Paving	1550	SY		
15	ABC Paving	10010	SY		
16	Sidewalk	100	SY		
17	Concrete Scale Ramps	4	EA		
18	Scale Foundation/Washout Slab	2	EA		
19	Scales	2	EA		
20	Stabilization	5.1	AC		
21	Bollards	12	EA		
22	Water Service	1	LS		
23	Sewer Service - Septic System	1	LS		
24	Chain Link Fence and Gates	3975	LF		
25	Pavement Striping	1	LS		
26	Concrete Walls/Foundations (Tire Pad)	1	LS		
27	Concrete Slab (Tire Pad)	1	LS		
28	PEMB Canopy	1	LS		
29	General Conditions-Building	1	LS		
30	Concrete	1	LS		
31	Masonry	1	LS		
32	Steel Carpentry	1	LS		
33	Moisture & Thermal Protection	1	LS		
34	Doors, Windows, & Glass	1	LS		
35	Finishes	1	LS		
36	Specialties	1	LS		
37	Plumbing	1	LS		
38	Mechanical	1	LS		
39	Electrical	1	LS		
40	Miscellaneous Work & Cleanup	1	LS		
41	Landscape Buffer	1	LS		
TOTAL AMOUNT					

In words: _____

Bidder: _____

Date: _____

BID BOND (PENAL SUM FORM)

Bidder Name: [Full formal name of Bidder] Address <i>(principal place of business)</i> : [Address of Bidder's principal place of business]	Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i> : [Address of Surety's principal place of business]
Owner Name: [Full formal name of Owner] Address <i>(principal place of business)</i> : [Address of Owner's principal place of business]	Bid Project <i>(name and location)</i> : [Owner project/contract name, and location of the project] Bid Due Date: [Enter date bid is due]
Bond Penal Sum: [Amount] Date of Bond: [Date]	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder	Surety
_____ <i>(Full formal name of Bidder)</i>	_____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature) (Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<i>Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.</i>	

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

QUALIFICATIONS STATEMENT

ARTICLE 1—GENERAL INFORMATION

1.01 Provide contact information for the Business:

Legal Name of Business:			
Corporate Office			
Name:		Phone number:	
Title:		Email address:	
Business address of corporate office:			
Local Office			
Name:		Phone number:	
Title:		Email address:	
Business address of local office:			

1.02 Provide information on the Business's organizational structure:

Form of Business:	<input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation		
<input type="checkbox"/> Limited Liability Company <input type="checkbox"/> Joint Venture comprised of the following companies:			
1.			
2.			
3.			
Provide a separate Qualification Statement for each Joint Venturer.			
Date Business was formed:		State in which Business was formed:	
Is this Business authorized to operate in the Project location?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Pending	

- 1.03 Identify all businesses that own Business in whole or in part (25% or greater), or that are wholly or partly (25% or greater) owned by Business:

Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			

- 1.04 Provide information regarding the Business's officers, partners, and limits of authority.

Name:		Title:		
Authorized to sign contracts: <input type="checkbox"/> Yes <input type="checkbox"/> No		Limit of Authority:	\$	
Name:		Title:		
Authorized to sign contracts: <input type="checkbox"/> Yes <input type="checkbox"/> No		Limit of Authority:	\$	
Name:		Title:		
Authorized to sign contracts: <input type="checkbox"/> Yes <input type="checkbox"/> No		Limit of Authority:	\$	
Name:		Title:		

ARTICLE 2—LICENSING

- 2.01 Provide information regarding licensure for Business:

Name of License:			
Licensing Agency:			
License No:		Expiration Date:	
Name of License:			
Licensing Agency:			
License No:		Expiration Date:	

ARTICLE 3—DIVERSE BUSINESS CERTIFICATIONS

- 3.01 Provide information regarding Business's Diverse Business Certification, if any. Provide evidence of current certification.

Certification	Certifying Agency	Certification Date
<input type="checkbox"/> Disadvantaged Business Enterprise		
<input type="checkbox"/> Minority Business Enterprise		
<input type="checkbox"/> Woman-Owned Business Enterprise		
<input type="checkbox"/> Small Business Enterprise		
<input type="checkbox"/> Disabled Business Enterprise		
<input type="checkbox"/> Veteran-Owned Business Enterprise		
<input type="checkbox"/> Service-Disabled Veteran-Owned Business		
<input type="checkbox"/> HUBZone Business (Historically Underutilized) Business		
<input type="checkbox"/> Other		
<input type="checkbox"/> None		

ARTICLE 4—SAFETY

- 4.01 Provide information regarding Business's safety organization and safety performance.

Name of Business's Safety Officer:		
Safety Certifications		
Certification Name	Issuing Agency	Expiration

- 4.02 Provide Worker's Compensation Insurance Experience Modification Rate (EMR), Total Recordable Frequency Rate (TRFR) for incidents, and Total Number of Recorded Manhours (MH) for the last 3 years and the EMR, TRFR, and MH history for the last 3 years of any proposed Subcontractor(s) that will provide Work valued at 10% or more of the Contract Price. Provide documentation of the EMR history for Business and Subcontractor(s).

Year									
Company	EMR	TRFR	MH	EMR	TRFR	MH	EMR	TRFR	MH

ARTICLE 5—FINANCIAL

- 5.01 Provide information regarding the Business's financial stability. ~~Provide the most recent audited financial statement, and if such audited financial statement is not current, also provide the most current financial statement.~~

Financial Institution:			
Business Address Account Manager Telephone			
Date of Business's most recent financial statement:		<input type="checkbox"/> Attached	
Date of Business's most recent audited financial statement:		<input type="checkbox"/> Attached	

ARTICLE 6—SURETY INFORMATION

- 6.01 Provide information regarding the surety company that will issue required bonds on behalf of the Business, including but not limited to performance and payment bonds.

Surety Name:			
Surety is a corporation organized and existing under the laws of the state of:			
Is surety authorized to provide surety bonds in the Project location?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is surety listed in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" published in Department Circular 570 (as amended) by the Bureau of the Fiscal Service, U.S. Department of the Treasury? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 7—INSURANCE

- 7.01 Provide information regarding Business's insurance company(s), including but not limited to its Commercial General Liability carrier. Provide information for each provider.

Name of insurance provider, and type of policy (CLE, auto, etc.):			
Insurance Provider		Type of Policy (Coverage Provided)	
Are providers licensed or authorized to issue policies in the Project location?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Does provider have an A.M. Best Rating of A-VII or better?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 8—CONSTRUCTION EXPERIENCE

- 8.01 Provide information that will identify the overall size and capacity of the Business.

Average number of current full-time employees:	
Estimate of revenue for the current year:	
Estimate of revenue for the previous year:	

- 8.02 Provide information regarding the Business's previous contracting experience.

Years of experience with projects like the proposed project:			
As a general contractor:		As a joint venturer:	
Has Business, or a predecessor in interest, or an affiliate identified in Paragraph 1.03:			
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Been barred from contracting by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Been released from a bid in the past 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Defaulted on a project or failed to complete any contract awarded to it? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Refused to construct or refused to provide materials defined in the contract documents or in a change order? <input type="checkbox"/> Yes <input type="checkbox"/> No			

<p>Been a party to any currently pending litigation or arbitration? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>Provide full details in a separate attachment if the response to any of these questions is Yes.</p>

- 8.03 List all projects currently under contract in Schedule A and provide indicated information.
- 8.04 List a minimum of three and a maximum of six projects completed in the last 5 years in Schedule B and provide indicated information to demonstrate the Business's experience with projects similar in type and cost of construction.
- 8.05 In Schedule C, provide information on key individuals whom Business intends to assign to the Project. Provide resumes for those individuals included in Schedule C. Key individuals include the Project Manager, Project Superintendent, Quality Manager, and Safety Manager. Resumes may be provided for Business's key leaders as well.

ARTICLE 9—REQUIRED ATTACHMENTS

- 9.01 Provide the following information with the Statement of Qualifications:
 - A. If Business is a Joint Venture, separate Qualifications Statements for each Joint Venturer, as required in Paragraph 1.02.
 - B. Diverse Business Certifications if required by Paragraph 3.01.
 - C. Certification of Business's safety performance if required by Paragraph 4.02.
 - ~~D. Financial statements as required by Paragraph 5.01.~~
 - E. Attachments providing additional information as required by Paragraph 8.02.
 - F. Schedule A (Current Projects) as required by Paragraph 8.03.
 - G. Schedule B (Previous Experience with Similar Projects) as required by Paragraph 8.04.
 - H. Schedule C (Key Individuals) and resumes for the key individuals listed, as required by Paragraph 8.05.
 - I. Additional items as pertinent.

This Statement of Qualifications is offered by:

Business:

(typed or printed name of organization)

By:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(date signed)

(If Business is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Address for giving notices:

Designated Representative:

Name:

(typed or printed)

Title:

(typed or printed)

Address:

Phone:

Email:

Schedule A—Current Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule C—Key Individuals

Project Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Project Superintendent			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Safety Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Quality Control Manager			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

NOTICE OF AWARD

Date of Issuance:

Owner: Catawba County

Owner's Project No.:

Engineer: Garrett & Moore, Inc.

Engineer's Project No.:

Project: Blackburn Resource Recovery Facility Waste Processing Facility Project

Contract Name: Blackburn Resource Recovery Facility Waste Processing Facility Project

Bidder:

Bidder's Address:

You are notified that Owner has accepted your Bid dated **[date]** for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

[Describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is **\$(Contract Price)**. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

[Number of copies sent] unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

☐ Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner **[number of copies sent]** counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders Construction Contract.
3. Other conditions precedent (if any): **[Describe other conditions that require Successful Bidder's compliance]**

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents.

Owner: **Catawba County**

By (signature): _____

Name (printed): _____

Title: _____

Copy: Engineer

NOTICE TO PROCEED

Owner: Catawba County Owner's Project No.: _____
Engineer: Garrett & Moore, Inc. Engineer's Project No.: _____
Contractor: _____ Contractor's Project No.: _____
Project: Blackburn Resource Recovery Facility Waste Processing Facility Project
Contract Name: Blackburn Resource Recovery Facility Waste Processing Facility Project
Effective Date of Contract: _____

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on **[date Contract Times are to start]** pursuant to Paragraph 2 of the Construction Contract.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement: **[Select one of the following two alternatives, insert dates or number of days, and delete the other alternative.]**

The date by which Substantial Completion must be achieved is **[date for Substantial Completion, from Agreement]**, and the date by which readiness for final payment must be achieved is **[date for readiness, from Agreement]**.

[or]

The number of days to achieve Substantial Completion is **[number of days, from Agreement]** from the date stated above for the commencement of the Contract Times, resulting in a date for Substantial Completion of **[date, calculated from commencement date above]**; and the number of days to achieve readiness for final payment is **[number of days, from Agreement]** from the commencement date of the Contract Times, resulting in a date for readiness for final payment of **[date, calculated from commencement date above]**.

Before starting any Work at the Site, Contractor must comply with the following:

[Note any access limitations, security procedures, or other restrictions]

Owner: Catawba County
By (signature): _____
Name (printed): _____
Title: _____
Date Issued: _____
Copy: Engineer

PERFORMANCE BOND

Contractor Name: [Full formal name of Contractor] Address <i>(principal place of business)</i> : [Address of Contractor's principal place of business]	Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i> : [Address of Surety's principal place of business]
Owner Name: Catawba County Mailing address <i>(principal place of business)</i> : 25 Government Drive Newton, North Carolina 28658	Contract Description <i>(name and location)</i> : [Owner's project/contract name, and location of the project] Contract Price: [Amount from Contract] Effective Date of Contract: [Date from Contract]
Bond Bond Amount: [Amount] Date of Bond: [Date] <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i> <hr/>	<i>(Full formal name of Surety) (corporate seal)</i> <hr/>
By: <hr/> <div style="text-align: center;"><i>(Signature)</i></div>	By: <hr/> <div style="text-align: center;"><i>(Signature)(Attach Power of Attorney)</i></div>
Name: <hr/> <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: <hr/> <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: <hr/>	Title: <hr/>
Attest: <hr/> <div style="text-align: center;"><i>(Signature)</i></div>	Attest: <hr/> <div style="text-align: center;"><i>(Signature)</i></div>
Name: <hr/> <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: <hr/> <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: <hr/>	Title: <hr/>
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
 - 3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
 - 3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - 3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
 - 5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
 - 5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
 - 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

- 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
- 6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
- 7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
 - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
- 8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
- 9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
- 10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
- 11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
- 12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
- 13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

- 14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
 - 14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
 - 14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
16. Modifications to this Bond are as follows: None

PAYMENT BOND

Contractor Name: [Full formal name of Contractor] Address <i>(principal place of business)</i> : [Address of Contractor's principal place of business]	Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i> : [Address of Surety's principal place of business]
Owner Name: Catawba County Mailing address <i>(principal place of business)</i> : 25 Government Drive Newton, North Carolina 28658	Contract Description <i>(name and location)</i> : [Owner's project/contract name, and location of the project] Contract Price: [Amount, from Contract] Effective Date of Contract: [Date, from Contract]
Bond Bond Amount: [Amount] Date of Bond: [Date] <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <div style="text-align: center;"><i>(Signature)</i></div>	By: _____ <div style="text-align: center;"><i>(Signature)(Attach Power of Attorney)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>	Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Contractor
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
 - 16.1. *Claim*—A written statement by the Claimant including at a minimum:
 - 16.1.1. The name of the Claimant;
 - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;

- 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
- 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
18. Modifications to this Bond are as follows: None

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: Catawba County
Engineer: Garrett & Moore, Inc.
Contractor:
Project: Blackburn Resource Recovery Facility Waste Processing Facility Project
Contract Name: Blackburn Resource Recovery Facility Waste Processing Facility Project

Owner's Project No.:
Engineer's Project No.:
Contractor's Project No.:

This ☐ Preliminary ☐ Final Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

[Describe the portion of the work for which Certificate of Substantial Completion is issued]

Date of Substantial Completion: **[Enter date, as determined by Engineer]**

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work must be as provided in the Contract, except as amended as follows:

Amendments to Owner's Responsibilities: ☐ None ☐ As follows:

[List amendments to Owner's Responsibilities]

Amendments to Contractor's Responsibilities: ☐ None ☐ As follows:

[List amendments to Contractor's Responsibilities]

The following documents are attached to and made a part of this Certificate:

[List attachments such as punch list; other documents]

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Engineer

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

NOTICE OF ACCEPTABILITY OF WORK

Owner:	Catawba County	Owner's Project No.:
Engineer:	Garrett & Moore, Inc.	Engineer's Project No.:
Contractor:		Contractor's Project No.:
Project:	Blackburn Resource Recovery Facility Waste Processing Facility Project	
Contract Name:	Blackburn Resource Recovery Facility Waste Processing Facility Project	
Notice Date:	Effective Date of the Construction Contract:	

The Engineer hereby gives notice to the Owner and Contractor that Engineer recommends final payment to Contractor, and that the Work furnished and performed by Contractor under the Construction Contract is acceptable, expressly subject to the provisions of the Construction Contract's Contract Documents ("Contract Documents") and of the Agreement between Owner and Engineer for Professional Services dated **[date of professional services agreement]** ("Owner-Engineer Agreement"). This Notice of Acceptability of Work (Notice) is made expressly subject to the following terms and conditions to which all who receive and rely on said Notice agree:

1. This Notice has been prepared with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in the same locality.
2. This Notice reflects and is an expression of the Engineer's professional opinion.
3. This Notice has been prepared to the best of Engineer's knowledge, information, and belief as of the Notice Date.
4. This Notice is based entirely on and expressly limited by the scope of services Engineer has been employed by Owner to perform or furnish during construction of the Project (including observation of the Contractor's Work) under the Owner-Engineer Agreement, and applies only to facts that are within Engineer's knowledge or could reasonably have been ascertained by Engineer as a result of carrying out the responsibilities specifically assigned to Engineer under such Owner-Engineer Agreement.
5. This Notice is not a guarantee or warranty of Contractor's performance under the Construction Contract, an acceptance of Work that is not in accordance with the Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of Contractor to furnish and perform the Work thereunder in accordance with the Contract Documents, or to otherwise comply with the Contract Documents or the terms of any special guarantees specified therein.
6. This Notice does not relieve Contractor of any surviving obligations under the Construction Contract, and is subject to Owner's reservations of rights with respect to completion and final payment.

Engineer

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

**CONSTRUCTION CONTRACT
FOR
BLACKBURN RESOURCE RECOVERY FACILITY
WASTE PROCESSING FACILITY PROJECT**

THIS AGREEMENT made as of the ____ day of _____, 2025, by and between Catawba County, a body politic and a political subdivision of the State of North Carolina, (hereinafter “County”) and _____, a corporation, (hereinafter “Contractor”). County and Contractor are referred to herein each as a “Party” and collectively as the “Parties”.

Project: Blackburn Resource Recovery Facility
Waste Processing Facility Project

Owner:
Catawba County
Attn: Mary Furtado
25 Government Drive
Newton, North Carolina 28658

Contractor:

NCGC License No. _____
Qualifier Name: _____

WITNESSETH:

Contractor and County, in consideration of the mutual covenants and agreements herein contained, agree as follows:

1. **SCOPE OF WORK:** Contractor shall furnish and deliver all of the materials and perform all of the work described in the Contract Documents (“Work”), except as specifically indicated in the Contract Documents to be the responsibility of others.
The Construction Agreement (“hereinafter Agreement”) consists of the Contract Documents which includes this Contract, the General Conditions of the Construction Contract, Specifications, Plans or Drawings, any Addenda issued prior to execution of this Contract or other documents listed in this Contract or incorporated herein by reference, and any Modifications executed by the Parties after execution of this Contract, all of which form the Agreement, and are as fully a part of this Agreement as if attached to this Contract or repeated herein. The Agreement represents the entire and integrated agreement between the Parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract Documents consist of this Contract and the following:
 1. General Conditions to Construction Contract, attached as Exhibit A.
 2. Project Manual bearing the general title “Blackburn Resource Recovery Facility, Waste Processing Facility Project” dated June, 2025 (“Specifications”).
 3. Drawings bearing the general title “Blackburn Resource Recovery Facility, Waste Processing Facility Project” (“Plans”).
 4. Addenda numbers __ to __, inclusive.

5. Completed Bid Form, attached as Exhibit B (“Bid”).
 6. Insurance and Payment and Performance Bonds, attached as Exhibit C-E (“Bonds”)
 7. Change Orders or Modifications Subsequently Executed by the Parties, (“Modifications”).
2. **TIME OF COMPLETION:** The Contractor shall commence Work to be performed under this Agreement on or about _____, 2025, and shall fully complete all work hereunder on or before _____, 2026, or within approximately Two Hundred and Ten (210) consecutive calendar days from issuance of the Notice to Proceed (“Time of Completion”). “Substantial Completion” as used herein shall have the meaning assigned to it in Exhibit A, attached.

Where Contractor is prevented from completing any part of the Work within the Time of Completion due to delay beyond the control of Contractor, the Time of Completion may be extended in an amount equal to the time lost due to the delay if a Claim is made as provided in Section 4.2 of the of the General Conditions and if the performance of the Work is not, was not, or would not have been delayed by any other cause for which the Contractor is not entitled to an extension of the Time of Completion under the Contract Documents. Delays beyond the control of Contractor include, but are not limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work, fires, floods, epidemics, abnormal weather conditions, or acts of God. Contractor acknowledges and agrees that adjustments in the Time of Completion will be permitted for a delay only to the extent such delay (i) is not caused, or could not have been anticipated, by Contractor; (ii) could not be limited or avoided by the Contractor’s timely notice to Owner of the delay or reasonable likelihood that a delay will occur; and (iii) is of a duration not less than one day. In no event will claims for delay be allowed where alleged delays do not impact the critical path of the Contractor as demonstrated on the relevant schedule provided by the Contractor for the period of time in which the delay allegedly occurred.

If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, supply chain disruptions, material or labor shortages, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor is entitled to an equitable adjustment in Time of Completion, if the adjustment is essential to Contractor’s ability to complete the Work within the Time of Completion. An adjustment in the Time of Completion is Contractor’s sole and exclusive remedy for the delays described in this Section.

Furthermore, to the fullest extent permitted by law, and notwithstanding anything to the contrary in the Contract Documents, an extension of the Time of Completion pursuant to Section 8.3 of the General Conditions, shall be the sole remedy of Contractor for any (i) delay in the commencement, prosecution, or completion of the Work, (ii) hindrance or obstruction in the performance of the Work, (iii) loss of productivity, or (iv) other similar claims (collectively referred to in this Section as “Delays”) whether or not such Delays are foreseeable, unless a Delay is caused by acts of Owner constituting active interference with Contractor’s performance of the Work, and only to the extent such acts continue after Contractor furnishes Owner with notice of such interference. In no event shall Contractor

be entitled to any compensation with any Delay, including, without limitation, consequential damages, lost opportunity costs, impact damages, or other similar remuneration. Owner's exercise of any of its rights under the Contract Documents (including, without limitation, ordering changes in the Work, or directing suspension, rescheduling, or correction of the Work), regardless of the extent or frequency of Owner's exercise of such rights or remedies, shall not be construed as active interference with Contractor's performance of the Work.

If the Time of Completion is not adjusted, then for each day in excess of the Time of Completion in which the Work is not complete, the Contractor shall pay the Owner the amount of Five Hundred Dollars (\$500.00) as liquidated damages, the rate of which is reasonably estimated and mutually agreed upon in advance, to cover the losses to be incurred by the Owner should the Contractor fail to complete the Work within the time specified.

3. CONTRACT ADMINISTRATION: County's Landfill Superintendent shall serve as the Contract Administrator for this Project.

Owner's Point of Contact for Project:	Rodney Hamby, Landfill Superintendent
Contractor's Point of Contact for Project:	_____
This Project was designed by:	Garrett & Moore, Inc. 1029 West South St Raleigh, North Carolina 27603

4. CONTRACT SUM: The Contract Sum is for an amount not to exceed _____ Dollars (\$_____.00). The Contractor agrees to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of the above titled Project in full and complete accordance with the plans, specifications and Contract Documents to the full and entire satisfaction of Catawba County with a definite understanding that no money will be allowed for extra work without written consent of the Owner.

5. PAYMENT:

- A. Submittal and Processing of Payments. Contractor shall submit Applications for Payment in accordance with Article 9 of the General Conditions. Applications for Payment will be processed by Designer as provided in the General Conditions.
- B. Progress Payments; Retainage. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the 30th day of each month during performance of the Work as provided below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to Liquidated Damages, in accordance with the Contract.
 - a. 95 percent of the value of the Work completed (with the balance being retainage).
 - b. 95 percent of cost of materials (excluding soil) and equipment not incorporated in the Work but delivered and suitable stored (with the balance being retainage).
 2. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less Retainage as provided in Paragraph 9.4, such amounts set off by Owner as Liquidated Damages, and less 200 percent of Architect's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.
 - C. Final Payment. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price less any such amounts set off by Owner as Liquidated Damages.
 - D. Consent of Surety. Notwithstanding the foregoing, Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the Surety to such payment, return, or release.
6. PAYMENT BOND: The Contractor is required to submit a Payment Bond in the amount of 100% of the Contract Sum, conditioned upon the prompt payment for all labor or materials for which Contractor or a subcontractor is liable.
7. PERFORMANCE BOND: The Contractor is required to submit a Performance Bond in the amount of 100% of the Contract Sum, conditioned upon the faithful performance of this Agreement in accordance with the Plans, Specifications and conditions of the Bid and Contract Documents.
8. CONTRACTOR REPRESENTATIONS: In order to induce Owner to enter into this Contract, Contractor makes the following representations:
- A. Contractor has examined and carefully studied the Contract Documents, including Addenda.
 - B. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 - C. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 - D. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating

to existing surface or subsurface structures at the Site with respect to the Technical Data in such reports and drawings, if any.

- E. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site.
 - F. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
 - G. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
 - H. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
 - I. Contractor has given Contract Administrator written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Architect is acceptable to Contractor.
 - J. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
 - K. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.
9. CONTRACTOR'S CERTIFICATIONS: Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10:
- A. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 - B. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - C. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

D. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10. NOTICES: Any notice required by this Agreement shall be in writing and delivered by certified or registered mail, return receipt requested to the following:

Owner:

Catawba County
25 Government Drive
Post Office Box 389
Newton, NC 28658

Contractor:

Engineer:

Garrett & Moore
1029 West South Street
Raleigh, NC 27603

11. UTILITIES: Owner may provide certain utilities such as power or water, with connections and extensions by the Contractor.

12. ACCESS CONTROL: Owner will provide Contractor access to the Project site as reasonably necessary to perform the Work. The Contractor will be issued construction badges that will allow access to building / departments. These badges will be required to be turned back in to Owner before final payment is issued.

13. POINT OF CONTACT: The Contractor’s Point of Contact (“POC”) for this Project is the Catawba County Landfill Superintendent, Rodney Hamby, (828) 312-1672. Any questions regarding the Project shall be directed to him.

14. HOURS OF OPERATION: The normal hours of operation are Monday through Friday, 8:00 a.m. to 5:00 p.m. If Contractor anticipates working outside of those normal hours for any reason, Contractor must coordinate that with the Catawba County Landfill Superintendent, Rodney Hamby, (828) 312-1672.

15. NO SMOKING POLICY: All Catawba County grounds and buildings are smoke and tobacco free. During the performance of the Work under this Agreement, Contractor agrees to enforce this policy and to require all employees and any subcontractors or material providers to abide by this policy when on County property.

16. E-VERIFY: Contractor shall comply with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes. Further, if Contractor utilizes a subcontractor, Contractor shall require the subcontractor to comply with the requirements of Article 2 of Chapter 64 of the North Carolina Statutes.

17. TIME OF THE ESSENCE: Time is of the essence in the performance of this Agreement.

18. COMPLIANCE WITH LAWS: Contractor represents that it is qualified and possesses the necessary skill and experience to perform the Work under this Agreement and that it will complete the Work in compliance with all applicable laws, ordinances, codes, rules and regulations. Contractor shall comply with all laws, ordinances, codes, rules, regulations,

and licensing requirements that are applicable to the conduct of its business, including those of federal, state, and local agencies having jurisdiction and/or authority, during the term of this Agreement.

19. WAIVER OF DEFAULT: Waiver by the County of any default or breach in compliance with the terms of this Agreement by Contractor shall not be deemed a waiver of any subsequent default or breach and shall not be construed to be a modification of the terms of this Agreement unless stated to be such in writing, signed by an authorized representative of the County and the Contractor and attached to the Agreement, and then only to the extent expressly stated.
20. CHOICE OF LAW: This Agreement shall be governed and construed in accordance with the laws of the State of North Carolina. Venue for any adversarial proceeding shall be set in Catawba County.
21. ENTIRE AGREEMENT: This Agreement constitutes the entire agreement and understanding between the Parties respecting the subjects covered herein, and shall not be modified in any respect except in a writing that is signed by both Parties. The Parties may enter into additional agreements to the extent they are not inconsistent with the terms hereof. In the event there is an inconsistency, the terms of this Agreement shall prevail.
22. EXECUTION: This Agreement may be executed electronically and in multiple counterparts, with each part so executed being deemed an original, however, collectively constituting but a single document.
23. HEADINGS: The Section and Paragraph headings in this Agreement are not material parts of the agreement and should not be used to construe the meaning thereof.
24. SEVERABILITY: In the event that a court of competent jurisdiction holds that a provision or requirement of this contract violates any applicable law, each such provision or requirement shall continue to be enforced to the extent it is not in violation of law or is not otherwise unenforceable and all other provisions and requirements of this contract shall remain in full force and effect.
25. FORCE MAJEURE: If Contractor's performance of Work is delayed by a force majeure, Contractor shall immediately, but in no case more than forty-eight (48) hours after such conditions become known, notify County of the delay, the reasons therefore and the anticipated duration of any such delay. Contractor's delay in the performance of services shall be excused during the duration of such force majeure, provided Notice was timely given under this Section.
26. INDEMNIFICATION: The Work to be performed by Contractor under this Agreement shall be performed entirely at Contractor's own risk. Contractor shall indemnify and save harmless the County, its commissioners, employees, agents and representatives from any and all liabilities and claims of every kind, including attorney's fees, to which County may

be subjected on account of loss, destruction or damage to property or injury to or death of persons, including Contractor and persons employed by Contractor, arising out of or in connection with performance of this Agreement. The provisions of this paragraph shall not be applicable to loss or damage caused by the negligent act of omission of County or its employees.

27. INSURANCE: Contractor will carry and maintain, throughout the period of this Agreement, at Contractor's sole expense, professional and general liability insurance of no less than \$1,000,000 per occurrence and \$2,000,000 annual aggregate; and worker's compensation insurance providing statutory limit coverage, plus Employer's Liability coverage with limits of not less than \$1,000,000 per accident and \$1,000,000 for each employee for injury by disease. In addition, the workers' compensation policy must contain a waiver of subrogation in favor of the County. Defense costs shall be in excess of the limit of liability. Contractor shall also provide automobile insurance coverage, when applicable, for any owned, hired, or rented vehicle with a limit of not less than \$1,000,000 per occurrence combined single limit for bodily injury and property damage liability and a limit of not less than \$15,000 for medical payment coverage. If employees, agents or representatives of Contractor, including specifically independent contractors under contract to Contractor, transport County's clients in their personal vehicles, Contractor will ensure that any such transportation service is covered by insurance, whether it be the insurance of Contractor or of the vehicle owner, and that vehicles are maintained in a condition that imposes no apparent risk to the clients and/or to the public.

Contractor shall maintain an occurrence basis (as distinguished from a "claims made" basis) Umbrella Liability policy (true follow form) over the underlying General Liability, Automobile Liability, and Employer's Liability, with the following limits of liability: Each Occurrence \$5,000,000 / Aggregate \$5,000,000.

Contractor shall maintain Pollution Liability policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations, with the following limits of liability: Each Occurrence \$5,000,000 / Aggregate \$5,000,000. This insurance shall be maintained for no less than two (2) years after final completion.

Catawba County shall be named as an additional insured under Contractor's automobile and general liability insurance company. In the event of a loss arising out of, or related to the Contractor's services performed under this Agreement, Contractor's Liability insurance shall be primary (pay first) with respect to any other insurance which may be available to the County, regardless of how the "other insurance" provisions may read.

Contractor has provided a Certificate of Insurance ("COI") which is attached hereto as Exhibit ___. Contractor agrees to indemnify County if the insurance policy referenced in the COI does not contain, at a minimum, the coverage amounts listed on the COI. All insurance policies put forth to satisfy the above requirements shall require the insurer issuing the underlying policy to provide County with a minimum of thirty (30) days' notice prior to modification or cancellation of said policy. The maintenance of such insurance

will not in any manner affect Contractor's obligation to indemnify County as described herein.

28. ASSIGNMENT: This Agreement or any right hereunder, shall not be assigned by either party, nor shall any duty hereunder be delegated by either party, without the express written consent of the other party. Any attempt at assignment or delegation without such consent shall be void.
29. INDEPENDENT CONTRACTOR: This Agreement does not constitute Contractor an employee, agent, representative, joint venture or partner of County for any purpose whatsoever. Contractor is not authorized to make any contract, agreement, warranty or representation, express or implied, on behalf of County. Neither Contractor nor any employee or agent of Contractor has an employment status with County and are not entitled to participate in any benefits extended by County to its own employees. All persons employed by Contractor to perform Services hereunder shall be subject to the exclusive direction and control of Contractor, it being the intention of the parties that Contractor and its employees shall remain independent contractors, not subject to the control of County.
30. SIGNATURE WARRANTY: The undersigned represent and warrant that they are authorized to bind their principals to the terms of this Agreement.
31. NON-DISCRIMINATION: Neither Party nor its employees will discriminate against any person based on race, religion, creed, color, sex, gender identity and expression, pregnancy, childbirth, breastfeeding, medical conditions related to pregnancy, childbirth, or breastfeeding, sexual orientation, marital status, age, national origin, ancestry, genetic information, disability, veteran status, low income status or any class protected by local, state, or federal law in the performance of this Agreement.

[Signatures on following page]

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

OWNER:

CATAWBA COUNTY

Mary Furtado, County Manager

Date

CONTRACTOR:

Name, Title

Date

THIS INSTRUMENT has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act as amended.

Date: _____

Mary Morrison, Chief Financial Officer

Account Number:

Amount:

Source: Federal ____ State ____ Local X

APPROVED AS TO FORM

Date: _____

Jodi Stewart, County Attorney

Date: _____

Jake Robinson, Risk Management

Exhibit A

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1 GENERAL PROVISIONS

1.1. BASIC DEFINITIONS

1.1.1 Contract for Construction ("Agreement"). The Contract Documents form the Agreement. The Agreement represents the entire and integrated agreement between the Parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Agreement may be amended or modified only by a Modification.

1.1.2 Contract Documents. The Contract Documents consist of the Contract between Owner and Contractor (hereinafter the Contract), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, advertisement or invitation to bid, Instructions to Bidders, other documents listed in the Agreement and Modifications issued after execution of the Contract. In the event of conflicts among the contract documents, the Specifications shall take precedence over the Drawings, and the Supplementary Conditions shall take precedence over the General Conditions. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Owner and a Subcontractor or Sub-subcontractor.

1.1.3 Contractor. The person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. Unless otherwise stated, the term "Contractor" means the General Contractor or the General Contractor's authorized representative.

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

1.1.5 Designer. The Architect or Engineer registered in accordance with the provisions of Chapter 89C of the NC General Statutes, identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Designer" refers to the Designer or the Designer's authorized representative(s). The Designer shall be entitled to performance and enforcement of obligations under the Agreement intended to facilitate performance of the Designers' duties.

1.1.6 Modification. A Modification is (1) a written amendment to the Contract signed by the parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Designer.

1.1.7 Owner. The person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Owner" means the Owner or the Owner's authorized representative.

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

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

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

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

1.2 EXECUTION, CORRELATION, AND INTENT

1.2.1 The Contract Documents shall be signed by the Owner and Contractor as provided in the Agreement. If either the Owner or Contractor or both do not sign all the Contract Documents, the Designer shall identify such unsigned Documents and insure that they are properly signed by the necessary Parties.

1.2.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed, correlated personal observations with requirements of the Contract Documents, has checked and verified all site conditions, and hereby waives any and all claims, present or future, for misrepresentation on the part of the Owner or Designer.

1.2.3 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.

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

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

1.3 OWNERSHIP AND USE OF DESIGNER'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS. The Drawings, Specifications and other documents prepared by the Designer are instruments of the Designer's service through which the Work to be executed by the Contractor is described. The Contractor may retain one contract record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Designer. The Owner will retain all common law, statutory and other reserved rights, in addition to the copyright of the drawings, specifications and other documents prepared by the Designer. All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Designer, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Designer, and copies thereof furnished to the Contractor, are for use solely with respect to this Project; they are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects without the specific written consent of the Owner and Designer. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Designer appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this license shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Designer. Submittal or distribution to meet official regulatory requirements or for other purposes in connection

with this Project is not to be construed as publication in derogation of the Owner's copyright or other reserved rights.

1.4 CAPITALIZATION. Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the document or (3) the titles of other documents.

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

ARTICLE 2 OWNER

2.1 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.1.1 The Owner shall furnish plans and profiles of existing County utilities. The Contractor is responsible for locating all existing utilities prior to Work.

2.1.2 Except for permits and fees which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

2.1.3 Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in orderly progress of the Work.

2.1.4 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary for execution of the Work.

2.2 OWNER'S RIGHT TO CARRY OUT THE WORK. If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case, an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Designer's additional services and expenses made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

3.1. REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.1.1 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner pursuant to Section 2.1, and shall at once report to the Designer and to the Owner errors, inconsistencies or omissions discovered. If the Contractor performs any construction activity knowing, or where Contractor should have known, it involves an error, inconsistency or omission in the Contract Documents without such notice to the Designer and Owner, the Contractor shall assume full responsibility for such performance and shall bear the full costs for correction.

3.1.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Designer and Owner immediately.

3.1.3 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Section 3.11.

3.2 SUPERVISION AND CONSTRUCTION PROCEDURES

3.2.1 The Contractor shall supervise and direct the Work using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless Contract Documents give other specific instructions concerning these matters.

3.2.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under a contract with the Contractor.

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

3.2.4 The Contractor shall be responsible for inspection of portions of Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.

3.3 LABOR AND MATERIALS

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

3.3.2 The Contractor shall enforce strict discipline, good order and compliance with all applicable laws, ordinances and County policies among the Contractor's employees and other persons carrying out the Work under the Agreement. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

3.3.3 Materials, equipment or items required for a complete job which are shown on the drawings but not mentioned in the specifications or materials, equipment or items required by the specifications but not shown on the drawings, shall be furnished and installed the same as though both shown on the drawings and required by the specifications.

3.4 WARRANTY

3.4.1 The Contractor warrants to the Owner and Designer that materials and equipment furnished under the Contract will be fit for their intended purpose, of good quality and new unless otherwise required or permitted by the Contract Documents; that the Work will be free from defects not inherent in the quality required or permitted; and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be

considered defective. If required by the Owner or Designer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.4.2 Except as otherwise specifically stated below, the Contractor shall guarantee his materials and workmanship against defect due to faulty materials or faulty workmanship or negligence for a period of twelve (12) months following Substantial Completion of the Work, unless otherwise provided for by the Parties in the certificate of completion. Where the manufacturer's warranty on equipment or parts thereof exceeds twelve (12) months, the guarantee period on such equipment or parts thereof shall be extended to include the full warranty of the manufacturer. The Contractor shall repair or replace such defective materials, equipment or workmanship to the full satisfaction of the Owner within the stipulated guarantee period without cost to the Owner.

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

3.6 PERMITS, FEES AND NOTICES

3.6.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Agreement and which are legally required when bids are received or negotiations concluded.

3.6.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on performance of the Work.

3.6.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Designer and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

3.6.4 If the Contractor performs Work the Contractor knows or should have known to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Designer and Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

3.7 ALLOWANCES

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

3.7.2 Unless otherwise provided in the Contract Documents: (1) materials and equipment under an allowance shall be selected promptly by the Owner to avoid delay in the Work; (2) allowances shall cover the cost to the Contractor of materials and equipment delivered to the site and all required taxes, less applicable trade discounts; (3) Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum and not in the allowances; (4) whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by a Change Order. The amount of the Change Order shall reflect (a) the difference between actual costs and the allowances under Clause 3.7.2.(2) and (b) changes in Contractor's costs under Clause 3.7.2.(3).

3.8 SUPERINTENDENT. The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing upon request.

3.9 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.9.1 Promptly after being awarded the Contract, the Contractor shall prepare and submit for the Designer's review and comment a construction schedule for the Work. The schedule shall not exceed time limits provided in the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. If separate prime contracts are awarded by the Owner in connection with this Project, the Contractor shall additionally submit a Contractor's construction schedule for the Work to the General Contractor in order for the General Contractor to carry out its duties under Article 6.

3.9.2 The Contractor shall prepare and keep current, for the Designer's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Designer reasonable time to review submittals.

3.9.3 The Contractor shall conform to the most recent schedules.

3.10 DOCUMENTS AND SAMPLES AT THE SITE. The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, addenda, Change Orders and other Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Designer and shall be delivered to the Designer for submittal to the Owner upon completion of the Work.

3.11 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

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

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

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

3.11.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Designer is subject to the limitations of Paragraph 4.1.6.

3.11.5 The Contractor shall review, approve and submit to the Designer Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action.

3.11.6 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been reviewed and approved or other appropriate action taken by the Designer. Such Work shall be in accordance with approved submittals.

3.11.7 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.11.8 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Designer's review and approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Owner and Designer in writing of such deviation at the time of submittal and the Designer, after consultation with the Owner, has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Designer's approval thereof.

3.11.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, product Data, Samples or similar submittals, to revisions other than those requested by the Designer on previous submittals.

3.11.10 Informational submittals upon which the Designer is not expected to take responsive action may be so identified in the Contract Documents.

3.11.11 When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Designer shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

3.12 USE OF SITE. The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

3.13 CUTTING AND PATCHING

3.13.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

3.13.2 The Contractor shall not damage or endanger a portion of the work or fully or partially completed construction of the Owner or separate contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.14 CLEANING UP

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

3.14.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor, or deducted from the next payment to the Contractor.

3.15 ACCESS TO WORK. The Contractor shall provide the Owner and Designer access to the Work in preparation and progress wherever located.

3.16 ROYALTIES AND PATENTS. The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Owner and Designer harmless from loss unless a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents. However, if the Contractor has, or should have, reason to believe that the required design, process or product is an infringement of a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Designer.

3.17 INDEMNIFICATION

3.17.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Designer, Designer's consultants, and agents and employees of any of them from and against claims, damages, economic losses and expenses of any kind (including but not limited to fees and charges of engineers, attorneys, and other professionals and costs related to court action or arbitration), arising out of or resulting from performance of the Work under this Agreement, provided such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, caused in whole or in part by negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable unless caused in whole or part by the negligence of Owner. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 3.17.

3.17.2 In claims against any person or entity indemnified under this Section 3.17, by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Section 3.17, shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

3.17.3 The obligations of the Contractor under this Section 3.17, shall not extend to the liability of the Designer, the Designer's consultants, and agents and employees of any of them arising out of (a) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (b) the giving of or the failure to give directions or instructions by the Designer, the Designer's consultants, and agents and employees of any of them provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 4 ADMINISTRATION OF THE CONTRACT

4.1 ADMINISTRATION OF THE CONTRACT

4.1.1 The Designer, in consultation with the Owner's Construction Manager ("Construction Manager"), will provide administration of the Contract as described in the Contract Documents, and will be the Owner's representative during construction through final payment, and with the Owner's concurrence, from time to time during the correction period described in Paragraph 11.2. The Designer will advise and consult with the Owner. The Designer will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument in accordance with other provisions of the Contract.

4.1.2 The Designer will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility as provided in Paragraph 3.2. The Designer will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Designer will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or of any other persons performing portions of the Work.

4.1.3 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate through the Designer. Communications by and with the Designer's consultants shall be through the Designer. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Designer.

4.1.4 Based on the Designer's inspections, observations and evaluations of the Contractor's Applications for Payment, the Designer will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

4.1.5 The Designer will have authority to reject Work which does not conform to the Contract Documents. Whenever the Designer considers it necessary or advisable for implementation of the intent of the Contract Documents, the Designer will have authority to require additional inspection or testing of the Work in accordance with Paragraphs 12.5.2 and 12.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Designer nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Designer to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

4.1.6 The Designer will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Designer's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Designer's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Designer's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Article 3. The Designer's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Designer, of any construction means, methods, techniques, sequences or procedures. The Designer's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

4.1.7 The Designer, in consultation with the Construction Manager, will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Paragraph 7.4.

4.1.8 The Designer will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will receive and forward to the Owner for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

4.1.9 The Designer will interpret and decide matters concerning performance under and requirements of the Contract documents on written request of either the Owner or Contractor. The Designer's response to such requests will be made with reasonable promptness and within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the Designer shall be furnished in compliance with this Paragraph 4.1.9, then delay shall not be recognized on account of failure by the Designer to furnish such interpretations until 15 days after written request is made for them.

4.1.10 Interpretations and decisions of the Designer will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Designer will endeavor to secure faithful performance by both Owner and Contractor, and will not show partiality to either.

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

4.1.12 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Article 11.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Designer may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Designer to stop the Work shall not give rise to a duty on the part of the Designer to exercise this right for the benefit of the Contractor or any other person or entity.

4.2 CLAIMS AND DISPUTES

4.2.1 A Claim is a demand or assertion by one of the Parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Agreement. Claims must be made pursuant to the Dispute Resolution Procedure set forth in Paragraph 4.4. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.2.2 DECISION OF DESIGNER. Claims, including those alleging an error or omission by the Designer, shall be referred initially to the Designer for action as provided in Paragraph 4.4. A decision by the Designer shall be required as a condition precedent to mediation and litigation of a Claim between any Party involved in this construction Project as to all such matters arising prior to the date final payment is due, regardless of whether such matters relate to execution and progress of the Work or the extent to which the Work has been completed. The decision by the Designer in response to a Claim shall not be a condition precedent to litigation in the event (1) the position of Designer is vacant, (2) the Designer has not received evidence or has failed to render a decision within agreed time limits, or (3) 45 days have passed after the Claim has been referred to the Designer.

4.2.3 TIME LIMITS ON CLAIMS. Claims by the Contractor must be made within 10 days after occurrence of the event giving rise to such Claim or within 10 days after the Contractor first recognizes the condition giving rise to the Claim, whichever is later. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered.

4.2.4 CONTINUING CONTRACT PERFORMANCE. Pending final resolution of a Claim, unless otherwise agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.2.5 WAIVER OF CLAIMS: FINAL PAYMENT. The making of final payment shall constitute a waiver of Claims by the Owner except those arising from: (1) unsettled claims arising out of the Agreement; or (2) failure of the Work

to comply with the requirements of the Contract Documents; or (3) terms of special warranties required by the Contract Documents.

4.2.6 CLAIMS FOR CONCEALED OR UNKNOWN CONDITIONS. If conditions are encountered at the site which are (a) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (b) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than ten (10) days after first observance of the conditions. The Designer will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Designer determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Designer shall so notify the Owner and Contractor in writing stating the reasons. Claims by either party in opposition to such determination must be made within twenty-one (21) days after the Designer has given notice of the decision. If the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Designer for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

4.2.7 CLAIMS FOR ADDITIONAL COST. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.3. If the Contractor believes additional cost is involved for reasons including but not limited to (a) a written interpretation from the Designer, (b) a written order for a minor change in the Work issued by the Designer, (c) termination of the Contract by the Owner, Claim shall be filed in accordance with the procedure established herein. This Article and Article 7, shall be the exclusive means by which the Contractor may claim additional cost or damages from the Owner, and the Contractor hereby waives any and all right to claim additional cost or damages by any other remedy including, without limitation by set off, *quantum meruit*, subrogation, or implied contract.

4.2.8 CLAIMS FOR ADDITIONAL TIME. If the Contractor wishes to make Claim for an increase in the Time of Completion, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary. Adverse weather conditions shall not be a basis for a Claim for additional costs.

4.3 INJURY OR DAMAGE TO PERSON OR PROPERTY. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, written notice as such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding ten (10) days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional cost or time related to this Claim is to be asserted, it shall be filed as provided in Subparagraphs 4.2.7 or 4.2.8.

4.4 DISPUTE RESOLUTION PROCEDURE

4.4.1 To prevent disputes and litigation, it is agreed by the Parties that any claim, question, difficulty or dispute arising from this Agreement or the construction process shall be first submitted to the Designer to address the issue. Upon review of the Claim, the Designer shall take one or more of the following preliminary actions within ten (10) days of receipt of a Claim: (1) request additional supporting data from the claimant, (2) submit a schedule to the parties indicating when the Designer expects to take action, (3) reject the Claim in whole or in part stating reasons for rejection, (4) recommend approval of the Claim by the other Party, or (5) suggest a

compromise. The Designer may also, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim.

4.4.2 If a Claim has been resolved, the Designer will prepare or obtain appropriate documentation.

4.4.3 The laws of the State of North Carolina shall apply to the interpretation and enforcement of this Agreement. Prior to initiating a legal action, any Party to this Agreement shall initiate the mediation process as provided in **Appendix A** to these General Conditions. Mediation, pursuant to this Section, shall be a precondition to initiating litigation concerning the dispute. During the pendency of any dispute and after a determination thereof, the Parties to the dispute shall act in good faith to mitigate any potential damages including utilization of construction schedule changes and alternate means of construction. All mediation sessions shall be held in Catawba County, North Carolina.

4.4.4 If the disputed issue cannot be resolved in mediation, the parties may seek resolution in the exclusive venue of the General Court of Justice in the County of Catawba and the State of North Carolina.

4.4.5 The dispute resolution procedure set forth in this Section shall be made available to any party involved in this construction Project including County, Contractor, Designer, Subcontractors as well as Sub-subcontractors and is a precondition to initiation of litigation concerning the dispute.

ARTICLE 5 SUBCONTRACTORS

5.1 DEFINITIONS

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

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

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Designer the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work, including (1) Heating, ventilating, and air conditioning, (2) Plumbing, (3) Electrical, and (4) General. The Designer will promptly reply to the Contractor in writing stating whether or not the Owner or the Designer, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Designer to reply promptly shall constitute notice of no reasonable objection.

5.2.2 The Contractor shall NOT substitute any person or company listed in the Contractor's original Bid Proposal, except (1) if the listed subcontractor's bid is later determined by the Contractor to be non-responsible or non-responsive or the listed subcontractor refuses to enter into a contract for the complete performance of the work, or (2) with the approval of the Owner for good cause shown by the Contractor.

5.3 SUBCONTRACTUAL RELATIONS. By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms and conditions of the Contract Documents and this Agreement, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these documents, assumes toward the Owner and Designer. Each subcontract agreement shall incorporate by reference the applicable terms of this Agreement, and shall preserve and protect the rights of the Owner and Designer under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site.

6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

6.1.3 The General Contractor shall provide for coordination of the activities of each separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate Contractors and the General Contractor in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor and separate contractors until subsequently revised.

6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10 and 11.

6.1.5 The General Contractor shall be responsible for scheduling the work of all contractors; the maintenance of the progress schedule for all prime contractors for this Project; and for the notification of the Designer of any changes in the progress schedule.

6.2 MUTUAL RESPONSIBILITY

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

6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Construction Manager and Designer apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an acknowledgment that the Owner's or separate Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 Costs caused by delays, by improperly timed activities, defective construction, or any other damages shall be borne by the Party responsible therefor. The Owner shall not be liable nor responsible for any delays or damages to the Contractor caused by separate Contractors or the Designer.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate Contractors as provided in Paragraph 10.2.5.

6.2.5 Claims and other disputes and matters in question between the Contractor and a separate Contractor shall be subject to the provisions of Sections 4.2 and 4.4, provided the separate Contractor has reciprocal obligations.

6.2.6 The Owner and each separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Paragraph 3.13.

6.3 OWNER'S RIGHT TO CLEAN UP. If a dispute arises among the Contractor, separate Contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Paragraph 3.14, the Owner may clean up and allocate the cost among those responsible as the Designer determines to be just.

ARTICLE 7 CHANGES IN THE WORK

7.1 CHANGES

7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive, or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Designer; a Construction Change Directive requires agreement by the Owner and Designer and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Designer alone pursuant to Paragraph 7.4.

7.1.3 Changes in the work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

7.1.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order or Construction Change Directive that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

7.1.5 Overhead and profit shall not exceed 10% of the value of labor and material for work performed by any contractor or subcontractor.

7.2 CHANGE ORDERS

7.2.1 A Change Order is a written instrument prepared by the Designer and signed by the Owner, Contractor, and Designer, stating their agreement upon all of the following: (1) a change in the Work; (2) the amount of the adjustment in the Contract Sum, if any; and (3) the extent of the adjustment in the Time of Completion, if any.

7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Paragraph 7.3.3.

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.1 A Construction Change Directive is a written order prepared by the Designer and signed by the Owner and Designer, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Time of Completion, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Time of Completion being adjusted accordingly.

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

7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods: (1) mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation; (2) unit prices stated in the Contract Documents or subsequently agreed upon; (3) cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or (4) as provided in Paragraph 7.3.6.

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

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

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Designer on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case, and also under clause 7.3.3(3), the Contractor shall keep and present, in such form as the Designer may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Paragraph 7.3.6 shall be limited to the following: costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance; costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed; rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others; costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and additional costs of supervision and field office personnel directly attributable to the change.

7.3.7 Pending final determination of cost to the Owner, amounts not in dispute may be included in Applications for Payment. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Designer. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

7.3.8 If the Owner and Contractor do not agree with the adjustment in Time of Completion or the method for determining it, the adjustment or the method shall be referred to the Designer for determination.

7.3.9 When the Owner and Contractor agree with the determination made by the Designer concerning the adjustments in the Contract Sum and Time of Completion, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

7.4 MINOR CHANGES IN THE WORK. The Designer or Construction Manager will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Time of Completion and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 8 TIME

8.1 DEFINITIONS

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

8.1.2 The date of commencement of the Work is the date established in the Agreement. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

8.1.3 The date of Substantial Completion is the date certified by the Designer in accordance with Paragraph 9.9.

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

8.1.5 Time is of the essence in all aspects of this Agreement.

8.2 PROGRESS AND COMPLETION

8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Time of Completion is a reasonable period for performing the Work. The Contractor and the Contractor's surety shall be liable for and shall pay the Owner such sums as shall be set forth in the Agreement between Owner and Contractor as liquidated damages each calendar day of delay until the work is substantially complete.

8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by the Agreement to be furnished by the Contractor. The date of commencement of the work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by a notice to proceed

given by the Designer, the Contractor shall notify the Owner and Designer in writing not less than five days before commencing the Work.

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

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is delayed at any time in progress of the Work by an act or neglect of the Owner or Designer, or of an employee of either, or of a separate Contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidably casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending litigation, or by other causes which the Designer determines may justify delay, then the Time of Completion shall be extended by Change Order for such reasonable time as the Designer may determine.

8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.2.8.

8.3.3 Should the Work be interrupted or hindered by the Owner or Designer, the Contractor shall be entitled to an extension of time pursuant to Paragraph 4.2 in an amount equal to such interruption or hindrance but such interruption or hindrance shall not constitute a claim for damages nor for loss of anticipated profits by the Contractor.

8.3.4 Should the Work be delayed in whole by any act or acts of the Contractor, the Contractor shall not be entitled to an extension of time pursuant to Paragraph 4.2, nor shall such delay constitute a claim either for damages or for loss of anticipated profits by the Contractor. Should the Work be delayed in part by any act or acts of the Contractor and in part by any act or acts of the Owner or Designer, the Contractor shall be entitled to an extension of time pursuant to Paragraph 4.2 in an amount equal to that portion of the delay for which the Contractor is not responsible, but such delay shall not constitute a claim either for damages or for loss of anticipated profits by the Contractor.

8.3.5 Should the Work be delayed, interrupted or hindered, in whole or in part, by any act or acts of any separate prime contractors, the Contractor shall be entitled to an extension of time pursuant to Paragraph 4.2.8 in an amount equal to such delay, interruption or hindrance but such delay, interruption or hindrance shall not constitute a claim for damages nor for loss of anticipated profits by the Contractor.

ARTICLE 9 PAYMENTS AND COMPLETION

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

9.2 SCHEDULE OF VALUES. Before the first Application for Payment, the Contractor shall submit to the Designer a Schedule of Values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Designer may require. This Schedule of Values, unless objected to by the Designer, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At least twenty (20) days before the date established for each progress payment, the Contractor shall submit to the Designer an itemized Application for Payment for operations completed in accordance with the

schedule of values. Such application shall be notarized, supported by such data substantiating the Contractor's right to payment as the Owner or Designer may require, such as copies of requisitions from subcontractors and material suppliers and reflecting retainage if provided for elsewhere in the Contract Documents.

9.3.2 Such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives but not yet included in Change Orders.

9.3.3 Such applications may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.

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

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

9.3.6 Provided an Application for Payment is received by the Designer not later than the tenth (10th) day of a month, the Owner shall make payment to the Contractor not later than the thirtieth (30th) day of the month.

9.4 RETAINAGE. To ensure proper performance of this Contract, Owner shall retain five percent (5%) of the amount of each approved Application for Payment until the Project Work is 50% complete provided that the Contractor continues to perform satisfactorily and any non-conforming Work identified in writing prior to that date has been corrected by the Contractor and accepted by the Owner. Thereafter, if the Owner determines the Contractor's performance is unsatisfactory, the Owner may reinstate retainage in the amount of 5% for each subsequent periodic Application for Payment until the Contractor's performance becomes satisfactory. The Project shall be deemed fifty percent (50%) complete when the Contractor's gross Project invoices, excluding the value of materials stored off-site, equal or exceed fifty percent (50%) of the value of the Contract Sum, except the value of materials stored on-site shall not exceed twenty percent (20%) of the Contractor's gross Project invoices for the purpose of determining whether the Project is fifty percent (50%) complete. Following 50% completion of the Project, the Owner may also withhold additional retainage from any subsequent periodic payment, not to exceed 5%, in order to allow the Owner to retain 2 ½% total retainage through the completion of the Project. Within sixty (60) days after the submission of a final pay application, the Owner with written consent of the Surety shall release to the Contractor all retainage on payments held by the Owner if (1) the Owner receives a certificate of substantial completion from the Designer or design consultant in charge of this Project, or (2) the Owner receives beneficial occupancy or use of the Project. However, the Owner may retain sufficient funds to secure completion of the Project or corrections to any Work. If the Owner retains funds, the amount retained shall not exceed two and one half times the estimated cost of the Work to be completed or corrected. Any reduction in the amount of retainage on payments shall be with the consent of the Contractor's Surety. Retainer provisions contained in Contractor's subcontracts may not exceed the terms and conditions for retainage provided herein. Contractor is further required to satisfy the retainage provisions of N.C.G.S. 143-

134.1(b2) with regard to subcontracts for early finishing trades (structural steel, piling, caisson, and demolition) and to coordinate the release of retainage for such trades from the retainage held by Owner from the Contractor pursuant to statute. Nothing herein shall prevent the Owner from withholding payment to the Contractor in addition to the amounts identified herein for unsatisfactory job progress, defective construction not remedied, disputed work, or third party claims filed against the owner or reasonable evidence that a third party claim will be filed.

9.5 CERTIFICATES FOR PAYMENT

9.5.1 The Designer will, within seven (7) days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Designer determines is properly due, or notify the Contractor and Owner in writing of the Designer's reasons for withholding certification in whole or in part as provided in Paragraph 9.6.1.

9.5.2 The Designer's certification for payment shall constitute a representation to the Owner, based on the Designer's inspections at the site and on the data comprising the Contractor's Application for Payment, that the Work has progressed to the point indicated and that the inspections of the construction, repairs, or installations have been conducted with the degree of care and professional skill and judgment ordinarily exercised by a member of his profession; and that to the best of his knowledge and in the professional opinion of the Designer, the Contractor has fulfilled the obligations of such plans, specifications, and contract. The Designer's certification for payment shall be signed and sealed by the Designer and presented to the Owner. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the Designer. The issuance of a Certificate for Payment shall further constitute a representation by the Designer, that the Contractor is entitled to payment in the amount certified.

9.6 DECISIONS TO WITHHOLD CERTIFICATION

9.6.1 The Designer may decide not to certify payment and may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Designer's opinion, the representations to the Owner required by Paragraph 9.5.2 cannot be made. If the Designer is unable to certify payment in the amount of the Application, the Designer will notify the Contractor and Owner as provided in Paragraph 9.5.1. If the Contractor and Designer cannot agree on a revised amount, the Designer will promptly issue a Certificate for Payment for the amount for which the Designer is able to make such representations to the Owner. The Designer may also decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Designer's opinion to protect the Owner from loss due to: defective Work not remedied; third party claims filed or reasonable evidence indicating probable filing of such claims; failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment; reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum; damage to the Owner or another contractor; reasonable evidence that the Work will not be completed within the Time of Completion, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or persistent failure to carry out the Work in accordance with the Contract Documents.

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

9.7 PROGRESS PAYMENTS

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

9.7.2 The Contractor must promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor must, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in similar manner.

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

9.7.4 Neither the Owner nor Designer shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

9.7.5 Payment to material suppliers must be treated in a manner similar to that provided in Paragraphs 9.7.2, 9.7.3, and 9.7.4.

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

9.8 FAILURE OF PAYMENT. The Contractor must not stop the Work for the failure of the Designer to issue a Certificate of Payment or the Owner to make timely payment.

9.9 SUBSTANTIAL COMPLETION

9.9.1 Substantial Completion is the stage in the progress of the Project when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents, so the Owner can occupy or utilize the Work for its intended use.

9.9.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Designer a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item or such list does not alter the responsibility for the Contractor to complete all Work in accordance with the contract Documents. Upon receipt of the Contractor's list, the Designer will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Designer's inspection discloses any item, whether or not included on the Contractor's list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Designer. The Contractor shall then submit a request for another inspection by the Designer to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Designer will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

9.9.3 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Designer, the Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof as provided in the Contract Documents.

9.10 PARTIAL OCCUPANCY OR USE

9.10.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Designer as provided under Subparagraph 9.9.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Designer.

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

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

9.11 FINAL COMPLETION AND FINAL PAYMENT

9.11.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Designer will promptly make such inspections and, when the Designer finds the Work acceptable under the Contract Documents and the Contract fully performed, the Designer will promptly issue a Final Certificate for Payment stating that to the best of the Designer's knowledge, information and belief, and on the basis of the Designer's observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said Final Certificate is due and payable. The Designer's Final Certificate for Payment will constitute a further representation that the conditions listed in Paragraph 9.11.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

9.11.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Designer (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Agreement to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5) if required by the Owner, other or additional data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances rising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the

Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

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

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

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract and construction of the Project.

10.1.2 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (hereinafter "PCB") which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Designer by phone and in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or PCB and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or PCB, or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Designer.

10.1.3 The Contractor shall not be required to perform without consent of Owner and Designer any Work relating to asbestos or PCB.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to: employees working on the Project and other persons who may be affected thereby; the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

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

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including erecting necessary barricades or other temporary walls and structures as required during the period of construction, posting danger signs and other

warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.

10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

10.2.5 The Contractor shall promptly remedy damage and loss to property referred to in Paragraphs 10.2.1.(2) and (3), caused in whole or in part by the Contractor, Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Paragraphs 10.2.1.(2) and (3), except damage or loss attributable to acts or omissions of the Owner or Designer and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Article 3. All costs to repair any damage and loss to property referred to in Paragraphs 10.2.1.(2) and (3), shall be the sole responsibility of the Contractor and such repair or replacement shall be performed expeditiously without cost to the Owner.

10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's Superintendent, required under Paragraph 3.8, unless otherwise designated by the Contractor in writing to the Owner and Designer.

10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

10.2.8 Existing utilities have been identified and described in the Contract Documents insofar as information is reasonably available, however, it is the Contractor's responsibility to verify such information and to preserve all existing utilities whether shown in the Contract Documents or not. If utility conflicts are encountered by the Contractor during construction, Contractor shall file sufficient notice to the owners of the utilities so that they may make the necessary adjustments, as well as the Designer or Designer.

10.3 EMERGENCIES. In an emergency affecting the safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Paragraphs 4.2.7, 4.2.8 and Article 7. As soon as practicable, the Contractor must notify the Construction manager and Designer of any such emergency.

ARTICLE 11 UNCOVERING AND CORRECTION OF WORK

11.1 UNCOVERING OF WORK

11.1.1 If a portion of the Work is covered contrary to the Designer's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Designer, be uncovered for the Designer's observation and be replaced at the Contractor's sole expense without change in the Time of Completion.

11.1.2 If a portion of the Work has been covered which the Designer has not specifically requested to observe prior to its being covered, the Designer may request to see such Work and it shall be uncovered by the Contractor. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Owner or a separate contractor in which event the Owner or separate contractor shall be responsible for payment of such costs. If such work is in accordance with the Contract

Documents, the Owner, by appropriate Change Order, shall be charged with the cost of uncovering and replacement.

11.2 CORRECTION OF WORK

11.2.1 The Contractor shall promptly correct Work rejected by the Designer or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear any and all costs of correcting such rejected Work, including additional testing and inspections and compensation for the Designer's services and expenses made necessary thereby.

11.2.2 If, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Paragraph 9.10.1 or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This period of one year shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the work. This obligation under this Paragraph 11.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

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

11.2.4 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Paragraph 2.2. If the Contractor does not proceed with correction of such nonconforming Work within a reasonable time fixed by written notice from the Designer, the Owner may remove it and store the salvageable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten (10) days after written notice, the Owner may upon ten (10) additional days' written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Designer's services and expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

11.2.5 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

11.2.6 Nothing contained in this Section 11.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one year as described in Paragraph 11.2.2, relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the work.

11.3 ACCEPTANCE OF NONCONFORMING WORK. If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and

correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 12 MISCELLANEOUS PROVISIONS

12.1 GOVERNING LAW. This Agreement shall be governed by and in accordance with the laws of the State of North Carolina. All actions relating in any way to this Contract, shall be brought exclusively in the General Court of Justice in the County of Catawba and the State of North Carolina, after exhausting the dispute resolution procedure set forth in Section 4.4, herein.

12.2 SUCCESSORS AND ASSIGNS. The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other Party hereto and to partners, successors, assigns, and legal representatives of such other Party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither Party to the Contract shall assign the Contract as a whole without written consent of the other. If either Party attempts to make such an assignment without such consent, that Party shall nevertheless remain legally responsible for all obligations under the Contract.

12.3 WRITTEN NOTICE. Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the business address listed in the Agreement.

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

12.5 WAIVER OF A RIGHTS. No action or failure to act by the Owner or Designer shall constitute an obligation or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

12.6 COMPLIANCE WITH LAWS. Contractor represents that it is in compliance with all Federal, State, and local laws, regulations or orders, as amended or supplemented. The implementation of this contract will be carried out in strict compliance with all Federal, State, or local laws regarding discrimination in employment.

12.7 TESTS AND INSPECTIONS

12.7.1 Tests, inspections, and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and the Owner shall bear the costs of tests, inspections, and approvals. Should any retest be necessary due to the failure of the Work to pass the first test or for any other reason whatsoever, the Contractor shall bear all related costs of retests, inspections or re-inspections, and approvals. The Contractor shall give the Designer timely notice of when and where tests and inspections are to be made so the Designer may observe such procedures.

12.7.2 If the Designer, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Paragraph 12.5.1, the Designer will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Designer of when and where tests and inspections are to be made so the Designer may observe such procedures.

12.7.3 If such procedures for testing, inspection or approval under Paragraphs 12.5.1 and 12.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including the costs of bringing the Work into compliance with the Contract Documents as well as the costs of any repeated procedures, testing, inspection or approval and the compensation for the additional services and expenses of the Designer.

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

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

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

12.8 COMMENCEMENT OF STATUTORY LIMITATION PERIOD. As between the Owner and Contractor:

Before Substantial Completion. As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion.

Between Substantial Completion and Final Certificate for Payment. As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the Final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the Final Certificate for Payment.

After Final Certificate for Payment. As to acts or failures to act occurring after the relevant date of issuance of the Final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any warranty provided under Paragraph 3.4, the date of any correction of the Work or failure to correct the Work by the Contractor under Section 11.2 or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

ARTICLE 13 TERMINATION OR SUSPENSION OF THE CONTRACT

13.1 TERMINATION BY THE CONTRACTOR

13.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 180 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor, for any of the following reasons: issuance of an order of a court or other public authority having jurisdiction; an act of government, such as a declaration of national emergency, making material unavailable; because the Designer has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Paragraph 9.6.

13.1.2 If one of the above reasons exists, Contractor shall send written notice of the condition to Owner and Designer and Owner and Designer shall have thirty (30) days to cure or correct the condition. If owner fails to

cure the Condition, the Contractor may, upon seven (7) additional days' written notice to the Owner and Designer, terminate the Contract and recover from the Owner payment for work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, not including overhead, profit, or damages. In no event shall Owner be responsible for lost profits, special or consequential damages.

13.2 TERMINATION BY THE OWNER FOR CAUSE

13.2.1 The Owner may terminate the Contract if the Contractor: refuses or fails to supply enough properly skilled workers or proper materials; fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors; persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or otherwise is in substantial breach of a provision of the Contract Documents.

13.2.2 When any of the above reasons exist, the Owner, upon certification by the Designer that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven (7) days written notice and opportunity to cure, terminate employment of the Contractor and may, subject to any prior rights of surety: take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor; and finish the Work by whatever reasonable method the Owner may deem expedient.

13.2.3 When the Owner terminates the Contract for one of the reasons stated in Paragraph 13.2.1, the Contractor shall not be entitled to receive further payment.

13.2.4 If the unpaid balance of the Contract Sum does not cover the cost of finishing the Work, the Contractor shall pay the difference to the Owner. The amount to be paid to the Owner, shall be certified by the Designer, upon application, and this obligation for payment shall survive termination of the Contract.

13.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

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

13.4 TERMINATION BY OWNER FOR CONVENIENCE

13.4.1 The Owner may, at any time, terminate the Contract for the Owner's Convenience and without cause.

13.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

1. Cease operations as directed by the Owner in the notice;
2. Take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
3. Except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

13.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work properly executed and costs incurred by reason of such termination. Termination shall not relieve the Contractor of its responsibilities for any completed portion of the Work nor shall it relieve its sureties of their obligation for and concerning any claims arising out of the Work performed.

13.4.4 In the event of termination by the Owner for convenience, the Contractor shall not be entitled to any other compensation, including compensation for lost profit, lost opportunity, or any other direct, special or consequential cost, loss or damage.

13.5 BANKRUPTCY

13.5.1 The bankruptcy of the Contractor shall not terminate this Contract until such time that it is specifically rejected by the Trustee or Contractor in bankruptcy. During the election period the Contractor has to assume or reject this Contract, the Contractor shall continue to perform its Work under the Contract.

13.5.2 In the event the Contractor in Bankruptcy assumes the Contract, the Contractor shall apply progress payments to all of its unpaid obligations on this Project before using any of these monies for either administrative expenses of the bankruptcy or as general assets of the estate.

13.6 SECURITY OF NON-PUBLIC RECORDS.

13.6.1 Pursuant to N.C.G.S. § 132-1.7 entitled, "Sensitive Public Security Information", public records, as defined in N.C.G.S. § 132-1, shall not include information containing specific details of public security plans and arrangements or the detailed plans and drawings of public buildings and infrastructure facilities. Therefore, all information provided, received, gathered or obtained by Contractor containing specific details of public security plans and arrangements or the detailed plans and drawings of public buildings and infrastructure facilities shall be held confidential and shall be used by the Contractor only for the purpose of fulfilling the terms of this Agreement. All plans and drawings shall be returned to the County, or otherwise destroyed at the direction of the County, upon termination or expiration of this Agreement. Any breach of this paragraph by Contractor shall result in the immediate termination of this contract.

Appendix A
RULES IMPLEMENTING MEDIATED
SETTLEMENT CONFERENCES IN
CATAWBA COUNTY
Adopted: February 5, 2024

Table of Rules

RULE

1. Initiating Mediated Settlement Conferences
 - A. Purpose of Mandatory Settlement Conferences
 - B. Initiating the Dispute Resolution Process
 - C. Condition Precedent to Litigation
2. Selection of a Mediator
 - A. Selection of a Certified Mediator by Agreement of the Parties
 - B. Withdrawal or Disqualification of a Mediator
3. The Mediated Settlement Conference
 - A. Where the Conference is to be Held
 - B. When the Conference is to be Held
 - C. Requests to Extend the Deadline for Completion
 - D. Recesses
 - E. Postponements
 - F. Construction Projects
4. Duties of Parties and Other Participants
 - A. Attendance
 - B. Finalizing the Agreement
 - C. Mediation Fee
 - D. Failure to Compensate the Mediator
5. Authority and Duties of Mediators
 - A. Authority of Mediators
 - B. Duties of Mediators
6. Compensation of the Mediator
7. Mediator Certification
8. Rule Amendments
9. Time Limits
10. No Recording

RULE 1. INITIATING MEDIATED SETTLEMENT CONFERENCES

- A. Purpose of Mandatory Settlement Conferences. Pursuant to Catawba County Code Section 8-35 and NCGS §143-128(f1), these Rules are promulgated to implement a system of settlement events which are designated to focus the parties' attention on settlement rather than on claim preparation and to provide a structured opportunity for settlement negotiations to take place. Nothing herein is intended to limit or prevent the parties from engaging in settlement procedures voluntarily at any time prior to or during commencement of the dispute resolution process.
- B. Initiating the Dispute Resolution Process.
1. Any party to a Catawba County contract governed by Catawba County Code Chapter(s) 8 or 30 and who is a party to a dispute arising out of the construction process in which the amount in controversy is at least \$15,000 may submit a written request to Catawba County for mediation of the dispute.
 2. Prior to submission of a written request for mediation to Catawba County, the parties should give notice of any and all claims in accordance with their respective contracts, obtain decisions on the claims as required or allowed by their respective contracts, and attempt to resolve the dispute according to the terms and conditions in their respective contracts. The Mediator may adjourn any mediated settlement conference if the Mediator believes, in his or her sole discretion, that the parties have not satisfied all of the terms and conditions of their respective contracts and that doing so will enhance the prospects for a negotiated settlement.
- C. Condition Precedent to Litigation. Before any party to a Contract may commence a civil action against Catawba County seeking remedies for breach or non-performance of the Contract by the County, said party must first initiate the dispute resolution process under these rules and attend and participate in good faith in the mediated settlement conference.

RULE 2. SELECTION OF A MEDIATOR

- A. Selection of a Certified Mediator by Agreement of the Parties. The parties shall select a Certified Mediator within twenty-one (21) days of receipt by the County of the request for mediation. If the Mediator selected is not available or declines to participate for any reason, the parties shall select another Certified Mediator. If the parties are unable to agree on a mediator within twenty-one (21) days of the request for mediation, the County shall have the right in its absolute discretion to appoint a Certified Mediator.
- B. Withdrawal or Disqualification of a Mediator. Any party may request replacement of a mediator by Catawba County for good cause. If a mediator withdraws or is disqualified, then the parties shall select another Certified Mediator within three (3) days of the notice of withdrawal or disqualification. A mediator who has withdrawn or been disqualified shall not be entitled to receive an administrative fee, unless the mediation has been commenced. If the parties do not select and designate a mediator within three (3) days from the notice of withdrawal or disqualification, the County shall have the right in its absolute discretion to appoint a Certified Mediator.

RULE 3. THE MEDIATED SETTLEMENT CONFERENCE

- A. Where the Conference is to be Held. Unless all parties and the mediator otherwise agree, the mediated settlement conference shall be held in Catawba County. The mediator shall be responsible for reserving a place and making arrangements for the conference and for giving timely notice of the time and location of the conference to all attorneys, unrepresented parties and other persons and entities required to attend.
- B. When the Conference is to be Held. The mediation shall be completed within ninety (90) days after selection of the mediator.
- C. Request to Extend the Deadline for Completion. A party, or the mediator, may request that Catawba County extend the deadline for completion of the mediated settlement conference. Such request shall state the reasons the extension is sought and shall be served by the moving party upon the other parties and the mediator. If any party does not consent to the request, said party shall promptly communicate its objection, and the reasons for its objection, to Catawba County. Catawba County may grant the request by setting a new deadline for completion of the conference, or deny the request to extend the deadline, resulting in an impasse of the mediation.
- D. Recesses. The mediator may recess the mediated settlement conference at any time and may set times for reconvening. If the time for reconvening is set before the conference is recessed, no further notification is required for persons present at the conference.
- E. Postponements. A mediated settlement conference session may be postponed for good cause only after notice by the movant to all parties of the reason for the postponement and a finding of good cause by Catawba County.
- F. Construction Project. The mediated settlement conference or the matter subject of the mediated settlement conference shall not be cause for the delay of the construction project which is the focus of the dispute.

RULE 4. DUTIES OF PARTIES AND OTHER PARTICIPANTS

- A. Attendance.
 - 1. All parties to the dispute must attend the mediated settlement conference. Failure of a party to a construction contract to attend the mediated settlement conference will result in Catawba County's withholding of monthly payment to that party until such party attends the mediated settlement conference.
 - 2. Attendance shall constitute physical attendance, not by telephone or other electronic means. Notwithstanding the foregoing, all parties and persons required to attend a mediated settlement conference may agree to conduct the conference using remote technology, or using a hybrid of in-person attendance and remote technology.
 - 3. Any party that is a nongovernmental entity shall be represented at the mediated settlement conference by an officer, employee, or agent who is not the

entity's outside counsel and who has been authorized to decide whether, and on what terms, to settle the action on behalf of the entity, or who has been authorized to negotiate on behalf of the entity and can promptly communicate during the conference with persons who have decision-making authority to settle the action; provided, however, that if a specific procedure is required by law (e.g., a statutory pre-audit certificate) or the entity's governing documents (e.g., articles of incorporation, bylaws, partnership agreement, articles of organization, or operating agreement) to approve the terms of the settlement, then the representative shall have the authority to negotiate and make recommendations to the applicable approval authority in accordance with that procedure.

4. Any party that is a governmental entity shall be represented at the mediated settlement conference by an employee or agent who is not the entity's outside counsel and who: (i) has authority to decide on behalf of the entity whether and on what terms to settle the action; (ii) has been authorized to negotiate on behalf of the entity and can promptly communicate during the conference with persons who have decision-making authority to settle the action; or (iii) has authority to negotiate on behalf of the entity and to make a recommendation to the entity's governing board, if under applicable law the proposed settlement terms can be approved only by the entity's governing board. Notwithstanding anything in these rules to the contrary, any agreement reached which involves a governmental entity may be subject to the provisions of NCGS §159-28(a).
5. Attorneys on behalf of parties may attend the mediated settlement conference but are not required to do so.
6. Sureties or insurance company representatives are not required to attend the mediated settlement conference unless any monies paid or to be paid as a result of any agreement reached as a result of mediation require their presence or acquiescence. If such agreement or presence is required, then authorized representatives of the surety or insurance company must attend the mediation.

- B. Finalizing the Agreement. If an agreement is reached in the mediated settlement conference, parties to the agreement shall reduce the terms to writing and sign it along with their counsel, if counsel is present, prior to the adjournment of the conference. If additional time is required to formalize an agreement, the mediator may recess the conference and set a time certain for reconvening pursuant to Rule 3(D). The time for reconvening shall be as soon as practicable to allow for formalization of the agreement.
- C. Mediation Fee. The mediation fee and any ancillary fees shall be paid in accordance with Rule 6 Compensation of the Mediator.
- D. Failure to Compensate the Mediator. Any party's failure to compensate the mediators in accordance with Rule 6 shall subject that party to a withholding of said amount of money from the party's monthly payment by Catawba County.

RULE 5. AUTHORITY AND DUTIES OF MEDIATORS

A. Authority of Mediators.

1. Control of Conference. The mediator shall at all times be in control of the mediated settlement conference and the procedures to be followed.
Figure 1.
2. Private Consultation. The mediator may communicate privately with any participant or counsel prior to and during the mediated settlement conference. The fact that private communications have occurred with a participant shall be disclosed to all other participants at the beginning of the conference.
3. Scheduling the Conference. The mediator shall make a good faith effort to schedule the mediated settlement conference at a time that is convenient with the participants, attorneys and mediator. In the absence of agreement, the mediator shall select the date for the mediated settlement conference.

B. Duties of Mediators.

1. The mediator shall define and describe the following at the beginning of the mediated settlement conference:
 - a. The process of mediation;
 - b. The difference between mediation and other forms of conflict resolution;
 - c. The costs of the mediated settlement conference;
 - a. That the mediated settlement conference is not a trial, the mediator is not a judge, and the parties retain their legal rights if they do not reach settlement;
 - b. The circumstances under which the mediator may meet and communicate privately with any of the parties or with any other person;
 - f. Whether and under what conditions communications with the mediator will be held in confidence during the conference;
 - g. The inadmissibility of conduct and statements as provided by NCGS §7A-38.1(l);
 - h. The duties and responsibilities of the mediator and the participants; and
 - i. Any agreement reached will be reached by mutual consent.
2. Disclosure. The mediator has a duty to be impartial and to advise all participants of any circumstance bearing on possible bias, prejudice or partiality.
3. Declaring an Impasse. It is the duty of the mediator to timely determine that an impasse exists and that the mediated settlement conference should end.
4. Reporting the Results of the Conference. The mediator shall report to Catawba County within ten (10) days of the mediated settlement conference whether or not an agreement was reached by the parties. If an agreement was reached, the report shall state the nature of said agreement. The mediator's report shall inform

Catawba County of the absence of any party known to the mediator to have been absent from the mediated settlement conference without permission. Catawba County must require the mediator to provide statistical data for evaluation of the mediated settlement conference program.

5. Scheduling and Holding the Conference. It is the duty of the mediator to schedule the mediated settlement conference and conduct it prior to the deadline of completion set by these Rules. Deadlines for completion of the conference shall be strictly observed by the mediator unless said time limit is changed by a written order from Catawba County.

RULE 6. COMPENSATION OF THE MEDIATOR

The parties shall compensate the mediator for mediation services, and any ancillary fees related to the mediation, at the rate in accordance with the rate charged for Superior Court mediation. The parties shall also pay to the mediator a one-time per case administration rate in accordance with the rate charged for Superior Court mediation, which is due upon appointment.

RULE 7. MEDIATOR CERTIFICATION

All mediators shall be properly certified in accordance with the rules certifying mediators in Superior Court in North Carolina. (Except when otherwise allowed by Catawba County upon the request of the parties to the mediation.) When selecting mediators, the parties may designate a preference for mediators with a background in construction law or public construction contracting. Such requirements, while preferred, are not mandatory under these Rules. All mediators chosen must either demonstrate they are certified in accordance with the Rules for Mediated Settlement Conferences in Superior Court or must gain the consent of Catawba County to mediate any dispute in accordance with these Rules.

RULE 8. RULE AMENDMENTS

These Rules are subject to amendment by Catawba County at any time the County deems appropriate.

RULE 9. TIME LIMITS

Any time limit provided for by these Rules may be waived or extended by the County for good cause shown.

RULE 10. NO RECORDING

There shall be no stenographic, audio, or video recording of the mediation process by any participant. This prohibition includes recording either surreptitiously or with the agreement of the parties.



catawba county

human resources

MAKING. LIVING. BETTER.

Catawba County Government Contractor Safety Guidebook



catawba county

Contractor Safety Guidebook Acknowledgement

I hereby acknowledge that I have received a copy of the Catawba County Government Contractor Safety Guidebook.

Name: _____

Title: _____

Company: _____

Signed: _____

Date: _____

Return to: Catawba County Government
Purchasing Department
PO BOX 389
Newton, NC 28658

The safety policy of Catawba County Government is to provide for the protection of its employees, citizens, visitors, facilities and surrounding environment through the development and implementation of a comprehensive safety program.

Contractors are expected to also provide safe workplaces and implement their own safety programs. This guidebook is intended to assist in coordinating Catawba County Government facilities and contractor operations during construction and renovation projects. By becoming familiar with the policies and procedures in this guidebook, the safety-minded contractor should get the job done safer and with less workplace hazards.

Contractors are expected to comply with all applicable Federal, State, and Local laws and also follow safe work practices for construction trades. Some of these regulations and safe work practices are outlined in this guidebook.

Due to the wide variety of construction operations, it is not possible to outline every conceivable applicable regulation and work practice in this guidebook. Nothing in this guidebook should be construed to be part of the contract specification.

Contractor management and supervision must thoroughly review their own work practices and workplace hazards and then provide employees all the necessary training and equipment for their safety.

EMERGENCY NUMBER — call 911.

Table of Contents

SAFETY PRORAM OBJETCTIVES5

BASIC SAFETY RULES5

SPECIAL PROCEDURES AND WORK PERMITS.....5

 HAZARDOUS COMMUNICAITONS AND CHEMICAL SAFETY..... 5-6

 EVACUATIONS AND TRENCHES6

 ELECTRICAL HAZARDS.....6

 LOCKOUT/TAG OUT 6-7

 CONFINED SPACE ENTRY PROGRAM 7-8

 FALL PROTECTION8

 SCAFFOLDS8

SAFETY POLICIES..... 8-9

	4
GENERAL SAFETY PROCEDURES	9
OSHA GENERAL DUTY CLAUSE	9
GENERAL INSPECTIONS AND TRAINING	9
MEDICAL SERVICES AND FIRST AID	10
HAND AND POWER TOOLS	10
PERSONAL PROTECTIVE EQUIPMENT (PPE)	10
EAR AND FACE PROTECTION	10-11
HEAD PROTECTION	11
HEARING PROTECTION	11
RESPIRATORY PROTECTION	11
GASES, VAPORS, FUMES, DUSTS, AND MISTS	11-12
ELECTRICAL	12
FIRE PROTECTION	13
FLAMMABLE AND COMBUSTIBLE LIQUIDS	13
WELDING, CUTTING, AND HEATING	13-14
HOUSEKEEPING	14
STORAGE	14
LADDERS	14
RAILINGS	15
SCAFFOLDS	15
AIRTOOLS	15
COMPRESSED AIR	16
COMPRESSED GAS CYLINDERS	16
HOISTS AND CRANES	16
ACCIDENT RECORD KEEPING AND REPORTING REQUIREMENTS	16

SAFETY PROGRAM OBJECTIVES

Safety and health programs strive to protect people, property, and the environment and must comply with governmental regulations. The objective of this guidebook is to assist in providing a safe environment for employees, citizens, visitors and construction workers in all areas during renovation or new construction projects.

Major objectives of a contractor's safety and health program are to:

1. Protect employees, visitors, property and the environment from potential hazards.
2. Provide a safe and healthful workplace free from recognized hazards.
3. Comply with all governmental safety, health, and environmental standards.
4. Maintain an effective health and safety program, which includes managers, supervisors, and employees.
5. Cooperate with building occupants and others involved in the work area to maintain a safe and healthful workplace.

BASIC SAFETY RULES

Contractors and their employees shall:

1. Observe the posted speed limit.
2. Obey all posted warnings.
3. Observe the No Smoking and Drug Free Workplace policies on the Catawba County Government Campus.
4. Refrain from fighting and horseplay on Catawba County Government property.
5. Remain in designated areas at all times and use approved travel routes into and out of the job site.
6. Maintain work areas in an orderly manner that does not block exits or traffic through the work area.
7. Remove trash daily.

SPECIAL PROCEDURES AND WORK PERMITS

The following special procedures are specific to Catawba County Government. Although some topics listed below are covered by state and federal regulations, they receive special interest in the County setting.

1. Hazard Communication and Chemical Safety

- a) Contractors shall have copies of Safety Data Sheets (SDS) available at the job site for review.
- b) To ensure that all contractors' employees know and understand the hazards of all chemicals they are exposed to and how to protect themselves from hazardous chemicals, each contractor must

establish and maintain an effective hazard communication program. The program must comply with OSHA standard 29 CFR 1926.59.

- c) The contractors HAZCOM program must provide:
 - A written hazard communication program,
 - An inventory of chemicals,
 - Safety data sheets (SDS) for all chemicals at the site, • Labeling of all containers and other warnings, and
 - Employee training.
- d) Catawba County will provide information to contractors if known asbestos or lead hazards are involved in the construction project. Upon discovery of materials that may contain asbestos (Presumed Asbestos asbestos-containing material, PACM) or lead, the contractor should contact the Project Manager and/or Risk Manager for environmental testing.

2. Excavations and Trenches

- a) A daily inspection of excavations, the adjacent areas, and protective systems shall be performed by a competent person.
- b) Trenches more than 5 feet deep require shoring or sloping.
- c) Substantial barricades to prevent persons from falling into an open trench shall be maintained around the perimeter of trenches. This is especially important at the end of the workday for trenches that must remain open overnight. A plastic ribbon is not substantial for this purpose.
- d) Ladders will be provided at least every 25 feet for access to trenches over 4 feet deep.

3. Electrical Hazards

- a) It is very important that each contractor establish and maintain an effective electrical safety-related work practices program. References for such a program include OSHA standards 29 CFR 1910.331 to 1910.333 — Electrical Safety-Related Work practices and CFR 1926 Subpart K Electrical.
- b) Training shall be documented for all employees who face a risk of electric shock from working on, near, or with electrical circuits which are not reduced to a safe level by electrical insulation.

4. Lockout/Tagout

- a) The lockout/tagout standard (the control of hazardous energy standard) in 29 CFR 1926.417 and will be followed by all contractors on all job sites. The OSHA lockout/tagout procedure requires at a minimum:
 - Use of locks and/or tags on energy isolating devices.

- Special lockout/tagout procedures for jobs requiring multiple lockout/tagout devices.
 - Contractors must provide their own lockout/tagout equipment.
 - All contractors' employees, (authorized, affected, and other employees), must be trained by the contractor (or another acceptable training source) concerning lockout/tagout procedures.
 - An annual inspection shall be conducted by an authorized employee of the contractor to evaluate the implementation & efficacy of lockout/ tagout procedures.
 - Locks and/or tags must not be removed by anyone other than the employee applying them except under a special, approved permit.
 - Testing or positioning of machines or equipment will be performed only under special procedures per OSHA 29 CFR 1910.147(f).
- b) Procedures: All contractors will have a general lockout/tagout program prior to performing work at or for Catawba County Government. A written form will be required for lockout/tagout procedures for machinery on equipment which require more than one energy isolating device to be locked and/or tagged.
- c) Training: All contractors' employees will be trained by the contractor (or another acceptable training source) concerning the lockout/tagout procedures prior to beginning work at the site. A record will be kept of all employees trained and verification (by exam or other written means) that they understood the training they received. The training will include the disciplinary actions which will be taken if lockout/ tagout procedures are not followed.
- d) Inspections: Audits and inspections of the lockout/tagout procedures will be conducted routinely by the contractor's foreman, supervisor, or on-site safety personnel. A record will be kept of the inspections and the follow- up action taken.

5. Confined Space Entry Program

- a) Confined spaces present serious potential hazards to employees entering them, including oxygen deficiency, toxic materials, flammable materials, and hazardous energy. Each contractor must establish and maintain an effective confined space entry procedure that complies with OSHA standard 29 CFR 1926.21(b)(6) and 1910.146 when applicable.
- b) For those contractors performing work in areas with confined spaces, a copy of the confined space entry procedures must be submitted to the Project Manager and/or Risk Manager prior to beginning work at the site.
- c) Contractors must provide all equipment required for safe entry, including special rescue equipment.

6. Fall Protection

- a) Reasonable fall protection shall be provided to protect personnel from accidental falls associated with floors, platforms, scaffolds, guardrails, physical barriers, and elevated work locations. Standard guardrails must be provided for work locations 6 feet or more above the adjacent level per OSHA standard 29 CFR 1926.500 and fall protection generally provided over 10 feet.
- b) All employees working at unguarded locations above 6 feet in construction (10 feet on scaffolds) must be protected by properly wearing approved fall protection equipment including safety harnesses and life lines as specified by supervision. All employees required to wear approved fall protection devices must be properly trained concerning the need for and purpose of the protection. In addition, employees must be instructed in the proper use of the equipment and shall demonstrate that they know, understand, and can use the fall protection devices properly.
- c) Supervisors shall ensure the use of fall protection devices as required by 29 CFR 1926.500 Subpart M.

7. Scaffolds

- a) Contractors shall comply with OSHA Standards 29 CFR 1926, Subpart L on Scaffolding and 29 CFR 1910.28.
- b) Access to scaffolds shall be limited to authorized personnel only, especially after working hours.

SAFETY POLICIES

- a) Facilities, Equipment, Tools and Vehicles: All workplace facilities equipment, tools and vehicles must be properly designed and maintained from a safety standpoint. All workplace facilities, equipment, and activities must comply with the applicable governmental regulations including OSHA and EPA. Proper stairs, ladders, platforms, and guardrails must be provided to ensure employee safety and compliance with OSHA regulations. All equipment tools and vehicles used must be used in accordance with manufacturers operating instructions.
- b) Education and Training: All managers, supervisors, and employees must be properly trained to recognize, evaluate, and control workplace safety and health hazards. No employee is allowed to perform a job until he or she has been properly trained to perform the job safely. Specific training must be provided concerning the safety rules and procedures pertaining to the jobs being performed. Safety and health training is to be conducted initially upon employment and at least annually thereafter. Frequent refresher training such as tool box safety talks should also be part of the training program.
- c) Inspections: Contractors should perform frequent and regular safety inspections.

- d) **Emergency Procedures:** All employees must know, understand, and be able to follow all workplace emergency procedures pertaining to their assignment, including calling 911. Periodic tests, drills, audits, etc. must be conducted to verify employee knowledge and understanding of all emergency procedures.
- e) **Accidents:** All accidents, incidents, injuries and illnesses must be reported to supervision immediately, so they can be properly investigated and employees properly protected. Injuries and illnesses requiring an “Employers’ first Report of Accident” will be reported to the Project Manager and/or Risk Manager.
- f) **Manual Materials Handling:** Manual materials handling and other physical activities must be performed only by those employees physically able to do so.
- g) **Enforcement:** Contractors should consider disciplinary action for unsafe acts.

GENERAL SAFETY PROCEDURES

The following General Safety Procedures apply to the entire workplace and should be followed by managers, supervisors and employees.

1. OSHA General Duty Clause

Hazardous conditions or practices not covered in an OSHA standard may be covered under Section 5(a)(1) of the Occupational Safety and Health Act of 1970 which states: “Each employer shall furnish to each of his employee’s employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees.”

2. General Inspections and Training

- a) Contractors should designate a competent site-safety coordinator for each job site. The contractor’s site-safety coordinator should be identified to the Project Manager and/or Risk Manager in the event that safety concerns regarding the worksite arise.
- b) Contractors should initiate and maintain an inspection program to provide for frequent and regular self-inspections of the job site, materials, and equipment.
- c) Contractors should instruct each employee in the recognition and avoidance of unsafe conditions and in the regulations applicable to his or her work environment and to control or eliminate any hazards or other exposure to illnesses or injury.
- d) The use of any machinery, tool, material, or equipment which is not in compliance with any applicable requirements of North Carolina DOL or OSHA standards is prohibited.

3. Medical Services and First Aid

- a) A person trained to render first aid is to be available at the worksite.
- b) Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.

4. Hand and Power Tools

- a) Electric power operated tools shall either be approved double-insulated, or be properly grounded, and used with ground fault circuit interrupters when used in damp or wet areas.
- b) Only authorized and properly trained employees shall use power tools.
- c) Powder actuated tools require certified operators and warning signs posted in all areas affected by the noise of the nail gun.
- d) Wrenches shall not be used when the jaws are sprung to the point that slip page occurs.
- e) Impact tools shall be kept free of mushroomed heads.
- f) The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.

5. Personal Protective Equipment (PPE)

Appropriate personal protective equipment shall be worn in all operations where there is an exposure to hazardous conditions or where the need is indicated for using such equipment to reduce the hazard to the employees.

6. Eye and Face Protection

- a) Eye and face protection shall be provided when machines or operations present potential eye or face injury.
- b) Eye and face protective equipment shall meet the requirements of ANSI Z87.1-1991, "Practice for Occupational and Educational Eye and Face Protection."
- c) Employees involved in welding operations shall be furnished with filter lenses or plates of at least the proper shade number.
- d) Employees exposed to laser beams shall be furnished suitable laser safety goggles that will protect for the specific wavelength of the laser and be optical density adequate for laser involved.

7. Head Protection

Head protective equipment (hard hats/ helmets) shall be worn in areas where there is a possible danger of head injuries from impact, flying or falling objects, or electrical shock and burns. Hard hats/ helmets shall meet the performance requirements of ANSI Z89.1, “Standard for Industrial Protective Helmets.”

8. Hearing Protection

- a) Feasible engineering or administrative controls shall be utilized to protect employees against sound levels in excess of those shown in Table D-2, OSHA Standard 1926.52
- b) When engineering or administrative controls fail to reduce sound levels within the limits of Table D-2, hearing protective devices shall be provided and used.
- c) Hearing protection is required at constant noise above 85 decibels or impact noise above 140 decibels.
- d) In all cases where the sound levels exceed the values shown in safety and health regulations, a hearing conservation program shall be administered.

9. Respiratory Protection

- a) When engineering or administrative controls are not effective in controlling toxic substances, appropriate respiratory protective equipment will be provided and shall be used.
- b) Respiratory protective devices provided by supervisors shall be appropriate for the hazardous material involved and the extent and nature of the work requirements and conditions.
- c) Employees required to use respiratory protective devices shall be thoroughly trained in their use.
- d) Contractors should have a written respirator protection program that includes respirator training, fit-testing and medical qualification documentation.

10. Gases, Vapors, Fumes, Dusts, and Mists

- a) Exposure to toxic gases, vapors, fumes, dusts, and mists at a concentration above those specified in the most recent “Threshold Limit Values of Airborne Contaminants” of the ACGIH, shall be avoided.
- b) Administrative or engineering controls must be implemented whenever feasible to comply with TLV’s.
- c) When engineering and administrative controls are not feasible to achieve full compliance, protective equipment or other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed. Any equipment and technical measures used for this purpose must first be approved for each particular use by an industrial hygienist or other technically qualified person.

11. Electrical

- a) All electrical work shall be in compliance with the most recent National Electrical Code or the NEC according to the construction documents.
- b) Only qualified persons are permitted to work on or near energized conductors or parts and then only under special procedures that ensure proper employee protection.
- c) Unqualified persons shall not be allowed to work within 10 feet of energized overhead power lines.
- d) Equipment must not be operated closer than 10 feet to overhead energized power lines unless specific procedures are followed by qualified persons using appropriate protection equipment.
- e) Extension cords used with portable electric tools shall be the 3-wire type and shall be protected from damage. Splices shall have soldered wire connections with insulation equal to the original. Worn or frayed cords shall not be used.
- f) Bulbs on temporary lights shall be equipped with guards or deeply recessed in the reflector. Temporary lights shall not be suspended by their electric cords unless designed for suspension.
- g) Receptacles for attachment plugs shall be of the approved concealed contact type. Where different voltages, frequencies, or types of current are supplied receptacles shall be of such designs that attachment plugs are not interchangeable.
- h) Each disconnecting means of motors and appliances and each service feeder or branch circuit at the point where it originates shall be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident.
- i) Cable passing through work areas shall be covered or elevated to protect it from damage which would create a hazard to employees.
- j) Boxes for disconnecting means shall be securely and rigidly fastened to the surface upon which they are mounted and fitted with covers.
- k) All extension cords and cord and plug connected equipment shall be protected by an assigned equipment grounding conductor program.
- l) No employer shall permit an employee to work in proximity to any part of an electric power circuit that he may contact, unless the employee is protected against electric shock by de-energizing the circuit and grounding it or by guarding it by effective insulation or other means.
- m) In work areas where the exact location of underground electric power lines is unknown, workers using jackhammers, bars, or other hand tools which may contact an energized line shall be provided with insulated protective gloves.

12. Fire Protection

- a) Firefighting equipment will be conspicuously located, readily accessible at all times, shall be periodically inspected, and shall be maintained in operating condition.
- b) Extinguishers are to be placed at least every 75 feet. Extinguishers are to be provided by the contractor.
- c) Each employee must know the alarm system at the worksite so the employees and the local fire department, can be alerted during an emergency.

13. Flammable and Combustible Liquids

- a) Flammable and combustible liquids shall only be stored in approved containers and in appropriate quantities for the job site use.
- b) Conspicuous and legible signs prohibiting smoking shall be posted in service and refueling areas.
- c) Flammable liquids shall be dispensed through grounded and bonded containers.

14. Welding, Cutting and Heating

- a) All employees shall be instructed in the safe use of welding equipment prior to using this equipment.
- b) Proper precautions (isolating welding and cutting, removing fire hazards from the vicinity, providing a fire watch, etc.) for fire prevention shall be taken where welding or other “hot work” is being done. No welding, cutting or heating shall be done where the application of flammable paints or the presence of any other flammable compounds, or heavy dust concentration creates a fire hazard.
- c) Arc welding and cutting operations shall be shielded by noncombustible or flameproof shields to protect persons from direct arc rays. Visual barrier screens are required for arc welding operations.
- d) When electrode holders are to be left unattended, electrodes shall be removed and the holder shall be placed or protected so that it cannot make electrical contact with employees or conducting objects.
- e) All arc welding and cutting cables shall be completely insulated and be capable of handling the maximum current requirements for the job. There shall be no repairs or splices within 10 feet of the electrode holder except where splices are insulated equal to the insulation of the cable. Defective cables shall be repaired or replaced.
- f) Fuel gas and oxygen hoses shall be easily distinguishable and shall not be interchangeable. Hoses shall be inspected at the beginning of each shift and shall be repaired or replaced if defective.
- g) General mechanical or local exhaust ventilation or airline respirators shall be provided, as required, when welding, cutting or heating:

- zinc, lead, cadmium, mercury, or beryllium-bearing, materials in enclosed spaces.
- stainless steel with inert-gas equipment.
- in confined spaces.
- where an unusual condition can cause an unsafe accumulation of contaminants.

- h) Proper eye protective equipment shall be provided when appropriate.
- i) Oxygen cylinders will be stored in a well-protected, well ventilated, dry location 20 feet from combustibles.

15. Housekeeping

- a) Form and scrap lumber with protruding nails and all other debris shall be kept clear from all work areas.
- b) Combustible scrap and debris shall be removed at regular intervals.
- c) Containers shall be provided for collection and separation of all refuse.
- d) Covers shall be provided on containers used for flammable or harmful substances.
- e) Wastes shall be disposed of at frequent intervals
- f) Lay down areas shall be orderly and free from tripping hazards

16. Storage

- a) All materials stored in tiers shall be secured to prevent sliding, falling, or collapse.
- b) Aisles and passageways shall be kept clear and in good repair.
- c) Storage of materials shall not obstruct exits.
- d) Materials shall be stored with due regard to their fire characteristics.

17. Ladders

- a) The use of ladders with broken or missing rungs or steps, broken or split side rails or with other faulty or defective construction is prohibited. When ladders with such defects are discovered they shall immediately be withdrawn from service.
- b) Portable ladders shall be placed on a substantial base at a 4 to 1 pitch, have clear access at top and bottom, extend a minimum of 36 inches above the landing, or be provided with grab rails and secured against movement while in use.
- c) Portable metal ladders shall not be used for electrical work or where they may contact electrical conductors.
- d) Job-made ladders shall be constructed for their intended use. Cleats shall be inset into side rails 1/2 inch, or filler blocks used. Cleats shall be uniformly spaced, 12 inches, top-to-top.
- e) Except where either permanent or temporary stairways or suitable ramps or runways are provided, ladders shall be used to give safe access to all elevations.
- f) All users of ladders shall be properly trained and documented by the contractor.
- g) Ladders shall be inspected periodically by the contractor.

18. Railings

- a) A standard railing used to protect personnel from falls shall consist of top rail, intermediate rail, toe board, and posts, and have a vertical height of approximately 42 inches from upper surface of top rail to the floor, plat- form, etc.

- b) The top rail of a railing shall be smooth-surfaced, with strength to withstand at least 200 pounds. The intermediate rail shall be approximately halfway between the top rail and floor.
- c) A stair railing shall be of construction similar to a standard railing, but the vertical height shall be not more than 34 inches, nor less than 30 inches from upper surface of top rail to surface of tread in line with face or riser at forward edge of tread.

19. Scaffolds

- a) Scaffolds shall be erected on sound, rigid footing, capable of carrying the maximum intended load without settling or displacement.
- b) Scaffolds and their components shall be capable of supporting, without failure, at least 4 times the maximum intended load.
- c) Guardrails and toe boards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor, except needle beam scaffolds and floats. Scaffolds 4 feet to 10 feet in height, having a minimum dimension in either direction of less than 45 inches, shall have standard guardrails installed on all open sides and ends of platform.
- d) There shall be a screen with maximum 1/2-inch openings between the toe board and the guardrail, where the persons are required to work or pass under the scaffold.
- e) All planking shall be Scaffold Grade or equivalent. The maximum permissible span for 1 1/4 x 9 inch or wider plank of full thickness is 4 feet, with medium loading of 50 p.s.f.
- f) Scaffolding planking shall be overlapped a minimum of 12 inches or secured from movement.
- g) Scaffold planks shall extend over their end supports not less than 6 inches nor more than 12 inches.
- h) All scaffolding and accessories shall have any defective parts immediately replaced or repaired.
- i) An access ladder or equivalent safe access shall be provided.

20. Air Tools

- a) Pneumatic power tools shall be secured to the hose or whip in a positive manner to prevent accidental disconnection.
- b) Safety clips or retainers shall be securely installed and maintained on pneumatic impact tools to prevent attachments from being accidentally expelled.
- c) The manufacturer's safe operating pressure for all fittings shall not be exceeded.
- d) All hoses exceeding 1/2-inch inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.

21. Compressed Air

- a) Compressed air used for cleaning purposes shall not exceed 30 psi.
- b) Compressed air for cleaning will only be used with effective chip guarding and personal protective equipment. This requirement does not apply to concrete form, mill scale, and similar cleaning operations.

22. Compressed Gas Cylinders

- a) Valve protection caps shall be in place when compressed gas cylinders are transported, moved, or stored.

- b) Cylinder valves shall be closed when work is finished and when cylinders are empty or moved.
- c) Compressed gas cylinders shall be secured in an upright position at all times, except if necessary for short periods of time when cylinders are actually being hoisted or carried.
- d) Cylinders shall be kept at safe distances or shielded from welding or cutting operations. Cylinders shall be placed where they cannot become part of an electrical circuit.
- e) Oxygen and fuel gas regulators shall be in proper working order while in use.
- f) Applicable technical portions of American National Standards Institute, Z49.1, Safety in Welding and Cutting, shall be followed.

23. Hoists and Cranes

- a) Contractors must comply with the manufacturer's specifications and limitations for hoists. Rated load capacities, recommended operating speeds, and special hazard Warnings or instructions shall be posted on cars and platforms.
- b) Suspended loads should never be moved directly over personnel.

24. Accident Record Keeping and Reporting Requirements

Within eight (8) hours after the death of any employee from a work-related incident.

Within 24 hours of the in-patient hospitalization of one or more employees, amputation or loss of eye as a result of a work-related incident.

Risk Management will call OSH Division at 1-800-625-2267 or 919-779-8560.

SECTION C-850
DRAWING INDEX

CIVIL DRAWINGS

C-0 – COVER SHEET
C-1 – EXISTING CONDITIONS
C-2 – PHASE 1 EROSION CONTROL
C-3 – PHASE 2 EROSION CONTROL
C-4 – PHASE 3 EROSION CONTROL
C-5 – PROFILES
C-6 – PROFILES
C-7 – EROSION & SEDIMENT CONTROL DETAILS
C-8 – EROSION & SEDIMENT CONTROL DETAILS
C-9 – EROSION & SEDIMENT CONTROL DETAILS
C-10 – EROSION & SEDIMENT CONTROL DETAILS

STRUCTURAL DRAWINGS

B1.1 – SLAB PLAN, PLAN NOTES & SCHEDULES
B1.2 – ELEVATIONS
B1.3 – ROOF PLAN, PLAN NOTES & SCHEDULES
S1.1 – SLAB PLAN, PLAN NOTES & SCHEDULES
S1.2 – ELEVATIONS
S1.3 – STRUCTURAL NOTES, DESIGN CRITERIA, AND SCHEDULES

BUILDING DRAWINGS

G101 – COVER SHEET
G102 – BUILDING CODE SUMMARY, LIFE SAFETY PLAN
A101 – FLOOR PLAN, SCHEDULES
A201 – ROOF PLAN, REFLECTED CEILING PLAN
A401 – DOOR, WINDOW, SCHEDULES AND DETAILS
A501 – BUILDING ELEVATIONS
A502 – BUILDING INTERIOR ELEVATIONS
A601 – BUILDING SECTION
A701 – WALL SECTIONS
A801 – DETAILS
AS101 – ARCHITECTURAL SPECIFICATIONS
AS102 – ARCHITECTURAL SPECIFICATIONS
AS103 – ARCHITECTURAL SPECIFICATIONS
AS104 – ARCHITECTURAL SPECIFICATIONS
S101 – FOUNDATION AND FRAMING PLANS
S102 – SECTIONS AND DETAILS

P001 – PLUMBING NOTES, LEGENDS, DETAILS & FIXTURE SCHEDULE
P101 – PLUMBING PLAN AND DETAILS
M001 – MECHANICAL PLAN, NOTES, LEGEND, SCHEDULES, DETAILS
E001 – ELECTRICAL SYMBOL LEGEND, NOTES, DETAILS
E101 – ELECTRICAL PLANS
E201 – POWER RISER, PANEL SCHEDULE

END OF SECTION

SECTION 01010

SUMMARY OF WORK

PART 1: GENERAL

1.01 LOCATION OF WORK

- A. The Work of this Contract is generally located in Catawba County, North Carolina. The project site is the Blackburn Resource Recovery Facility located at 4017 Rocky Ford Rd., Newton, North Carolina.
- B. The project consists of furnishing and installing, complete, including labor, equipment, parts, materials, and other work incidental for the installation of the following:

A 311 square-foot building for scale control building, two (2) above-ground hydrostatic truck scales with all appurtenances, asphalt paving, gravel paving, concrete pads, RCP storm drain piping and erosion control measures.

1.02 WORK TO BE DONE

- A. Provide all labor, materials, equipment, tools, services and incidentals necessary to complete all work required by the Contract Documents to furnish and install all work as shown on the Drawings and specified herein.
- B. Complete the Work, in place, tested, and ready for continuous service. Perform or provide repairs, replacements and restoration required as a result of damages resulting from construction operations.
- C. Furnish and install all materials, equipment, and incidentals which are reasonably and properly inferable and necessary for the proper completion of the Work, whether specifically indicated in the Contract Documents or not.

1.03 DRAWINGS AND SPECIFICATIONS FURNISHED TO THE CONTRACTOR FOR CONSTRUCTION

- A. Electronic copy (.pdf) of the Drawings and Specifications will be provided to the Contractor.

1.04 ABBREVIATIONS AND REFERENCES

- A. Whenever reference is made to the furnishing of materials or testing thereof to conform to the standards of any technical society, organization or body, it shall be construed to mean the latest standard, code, specification or tentative specification adopted and published at the date of advertisement for bids, even if reference has been made to an earlier standard. Where standards, specifications or codes of the various technical societies, organizations or bodies

have been referred to throughout the Specifications, the referenced standard, specification or code is hereby made a part of the Contract the same as if herein repeated in full.

In the event of any conflict between any of these specifications, standards, codes or tentative specifications, and the Specifications, the latter shall govern.

- B. Reference to a technical society, organization, or body may be made in the Specifications by abbreviations, in accordance with the following list:

AASHTO	-	The American Assoc. of State Highway and Transportation Officials
ACI	-	American Concrete Institute
AISC	-	American Institute of Steel Construction
AGA	-	American Gas Association
ANSI	-	American National Standards Institute
ASCE	-	American Society of Civil Engineers
ASME	-	American Society of Mechanical Engineers
ASTM	-	American Society of Testing Materials
AWS	-	American Welding Society
AWWA	-	American Water Works Association
DIPRA	-	Ductile Iron Pipe Research Association
EPA	-	Environmental Protection Agency
FED.SPEC.	-	Federal Specifications
IEEE	-	Institute of Electrical and Electronic Engineers
OSHA	-	Occupational Safety and Health Administration
NCDOT	-	North Carolina Department of Transportation
NEMA	-	National Electrical Manufacturers Association

- C. When no reference is made to a code, standard, or specification, the standard specifications of the ASTM, the ANSI, the ASME, the IEEE, or the NEMA shall govern.

PART 2: PRODUCTS (Not Used)

PART 3: EXECUTION (Not Used)

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1: GENERAL

1.01 SCOPE OF WORK

- A The Project generally consists of furnishing and installing, complete, including labor, equipment, parts, materials, and other incidental work for the construction of the project as described in Section 01010 Summary of Work.
- B All contract prices included in Section C-410-Bid Form will be full compensation for all labor, materials, tools, equipment and incidentals necessary to complete the Work as shown on the Drawings and specified in the Contract Documents to be performed under this Contract.
- C The items listed below, refer to and are the same pay items listed in the Bid Form. They constitute all the pay items for the completion of the Work. No direct or separate payment will be made for providing miscellaneous temporary or accessory work, services, job signs, sanitary requirements, testing, safety devices, surveying, field engineering, approval and record drawings, water supplies, power, maintaining traffic, removal of waste, watchmen, and all other requirements of the General Conditions and DIVISION 1 - GENERAL REQUIREMENTS. Compensation for all such services, equipment and materials shall be included in the prices stipulated for the lump sum and unit price bid items listed herein.
- D Each lump sum and unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR'S overhead and profit for each separately identified item.
- E Restoration is not a separate bid item but is considered to be an integral part of the work under the contract, and all contract bid prices include the cost of restoration necessitated by the work related to that bid item.
- F Progress Payment for any item for which certifying surveys are required by Section 01050 will be made based on estimated quantities verified by the ENGINEER. The ENGINEER will verify all final quantities prior to Final Payment for that item. Certifying surveys will be required for payment greater than 75% of the estimated total amount of that bid item as required by Section 01050. No Final Payment will be made for any item for which certifying surveys required by Section 01050 have not been submitted and approved by the ENGINEER.

1.02 BID ITEMS

Item 1: Bonds, Mobilization and Insurance

1. Measurement for Bonds, Mobilization and Insurance will be based on actual invoice amounts to substantiate the actual bond and insurance premiums and other invoiced costs, as well as an allowance for mobilization/demobilization. Bonds, Mobilization and Insurance will be paid for at the contract lump sum bid price, which price and payment shall be full compensation for organizing and moving all forces, supplies, equipment, and incidentals to the project site, regardless of the number of times such moves are made, and all pre-construction costs incurred after award of the contract. This price shall also include costs for demobilization.
2. Payment of this item will be made at the applicable lump sum amount, as above determined, and will represent full compensation for providing the required 100-percent Payment Bond, 100-percent Performance Bond, all insurance and mobilization/demobilization in accordance with the requirements of the General Conditions. The ENGINEER will include payments for mobilization on the first and second construction estimates. Each payment will be for $\frac{1}{2}$ of the contract lump sum price for Mobilization, subject to the limits shown in the following table:

Contract Amount (CA)	Max. Payment First Estimate	Max. Payment Second Estimate
0 - \$40,000	CA x 0.05	CA x 0.05
\$40,000 - \$200,000	\$2,000	\$2,000
\$200,000 - \$2,000,000	CA x 0.01	CA x 0.01
\$2,000,000 and above	(CA x 0.005) + \$10,000	(CA x 0.005) + \$10,000

Item 2: Silt Fence

1. Measurement: The quantity of Silt Fence to be paid under this item will be the number of linear feet of Silt Fence complete and in place.
2. Payment: The unit price bid for this item will be full compensation for vegetation removal, furnishing, installing, inspection and maintaining Silt Fence as shown on the Drawings and specified herein, for the duration of the project or until areas are stabilized with vegetation. Silt Fence shall be removed upon completion and of the Project and successful stabilization of disturbed areas, as directed by the ENGINEER.

Item 3: Construction Entrance

1. The lump sum price for Construction Entrance shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Construction Entrance as shown in the Drawings and specified herein, including but not limited to, site preparations, geotextile fabric in areas subject to seepage or high water table, stone aggregate, maintenance and topdressing as required, and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 4: Skimmer Basin Outlet

1. The lump sum price bid for this item will be full compensation for all labor, materials, tools, equipment, supervision and incidentals required to construct the Skimmer Basin Outlet, including removal and disposal of existing structures, skimmer outlet, rip-rap dissipator, fittings, gaskets, emergency spillway, and other items required for the installation of the Skimmer Basin Outlet for which payment is not provided under other items in the bid form

Item 5: Sediment Pond Riser Barrel

1. The lump sum price bid for this item will be full compensation for all labor, materials, tools, equipment, supervision and incidentals required to construct the Sediment Riser Barrel, including removal and disposal of existing structures, precast concrete riser, filter diaphragm, skimmer outlet, anti-vortex device, barrel outlet pipe, rip-rap dissipator, flared end sections (FES), fittings, gaskets, emergency spillway, and other items required for the installation of the Sediment Basin Riser Barrel for which payment is not provided under other items in the bid form.

Item 6: Porous Baffles

1. Measurement: The quantity of Sediment Basin Porous Baffles to be paid under this item will be the number of linear feet of Sediment Basin Porous Baffles installed in accordance with the Plan Drawings.
2. Payment: The unit price bid for this item will be full compensation for furnishing and installing the Sediment Basin Porous Baffles as shown on the Drawings and specified herein and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 7: Grubbing/Stripping

1. Measurement: The quantity of Grubbing/Stripping which will be paid for under this item will be the actual number of cubic yards measured by comparing the pre-work topographic survey to the topographic survey

performed after the grubbing/stripping and prior to excavation and backfill, as required in Section 01050.

2. Payment: The unit price bid for this item will be full compensation for excavation and stockpiling grubbing/stripping materials from within the limits grubbing/stripping as shown on the Drawings and specified herein. No Final Payment will be made for this line item for which certifying surveys required by Section 01050 have not been submitted and approved by the ENGINEER.

Item 8: Excavation & Backfill

1. Measurement: The quantity of Excavation & Backfill which will be paid for under this item will be the actual number of cubic yards measured by comparing the topographic survey performed after the stripping and grubbing and prior to excavation and backfill, to the topographic survey performed upon the completion of excavation and backfill, as required in Section 01050.
2. Payment: The unit price bid for this item will be full compensation for excavation and backfilling to the design Subgrade Plan as shown on the Drawings and specified herein including but not limited to hauling, and backfilling; compaction, quality control and surveying; drainage and dewatering; sheeting and bracing; test pits to verify location and depth of existing buried utilities and other facilities; care and protection of existing utilities and structures; site restoration; conformance to all federal, state, and county Standards and requirements; and all other work required or incidental to the satisfactory completion of all Work under this contract for which payment is not provided under other items in the bid form. No Final Payment will be made for any excavation and backfilling for which certifying surveys required by Section 01050 have not been submitted and approved by the ENGINEER.

Item 9: Excavation & Stockpile

1. Measurement: The quantity of Subgrade Excavation & Stockpile which will be paid for under this item will be the actual number of cubic yards measured by comparing the topographic survey performed after the stripping, clearing and grubbing and prior to excavation and backfill, to the topographic survey performed upon the completion of excavation and stockpiling, as required in Section 01050.
2. Payment: The unit price bid for this item will be full compensation for excavation and stockpiling to the design Subgrade Plan as shown on the Drawings and specified herein including but not limited to hauling, and stockpiling; compaction, quality control and surveying; drainage and dewatering; care and protection of existing utilities and structures; site restoration; conformance to all federal, state, and county Standards

and requirements; and all other work required or incidental to the satisfactory completion of all Work under this contract for which payment is not provided under other items in the bid form. No Final Payment will be made for any excavation and stockpiling for which certifying surveys required by Section 01050 have not been submitted and approved by the ENGINEER.

Item 10: Catch Basins

1. Measurement: The quantity of Catch Basins to be paid under this line item is the actual quantity constructed in place, tested, and accepted by the ENGINEER.

2. The unit price for each Catch Basin shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Catch Basins as shown in the Drawings and specified herein, including but not limited to, excavation, dewatering, bedding material, backfill, testing, and all other work required or incidental to the satisfactory completion of all work under this item.

Item 11: 12-inch RCP

1. Measurement: The quantity of 12-inch RCP to be paid for under this item will be the actual number of linear feet of pipe in place measured horizontally along the centerline of the installed pipes.

2. Payment: The unit price bids per linear foot for this items will be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the designated pipe as shown on the Drawings and specified herein, including but not limited to furnishing and installing all pipe, fittings, couplings, pipe bedding, pipe backfill, flared end sections, rip rap dissipators, cleaning, testing, certifying surveying, and all other appurtenances and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 12: 24-inch RCP

1. Measurement: The quantity of 24" Inlet Pipe w/ Flared End Sections to be paid for under these items will be the actual number of linear feet of pipe in place measured horizontally along the centerline of the installed pipes.

2. Payment: The unit price bids per linear foot for this items will be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the designated pipe as shown on the Drawings and specified herein, including but not limited to furnishing and installing all pipe, fittings, couplings, pipe bedding, pipe

backfill, flared end sections, rip rap dissipators, cleaning, testing, certifying surveying, and all other appurtenances and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 13: 30-inch RCP

1. Measurement: The quantity of 30-inch RCP to be paid for under these items will be the actual number of linear feet of pipe in place measured horizontally along the centerline of the installed pipes.
2. Payment: The unit price bids per linear foot for this items will be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the designated pipe as shown on the Drawings and specified herein, including but not limited to furnishing and installing all pipe, fittings, couplings, pipe bedding, pipe backfill, flared end sections, rip rap dissipators, cleaning, testing, certifying surveying, and all other appurtenances and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 14: Asphalt Paving

1. Measurement: The quantity of Asphalt Paving which will be paid for under this item will be the actual number of square yards of Asphalt Paving as measured in the two-dimensional plan view installed and minimum thickness as verified by the Road Thickness Survey as required by Section 01050 – Field Engineering.
2. Payment: The unit price bid for this item will be full compensation for all labor, materials, tools, equipment, supervision required to furnish and install the Asphalt Paving as shown on the drawings and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 15: ABC Paving

1. Measurement: The quantity of ABC Paving which will be paid for under this item will be the actual number of square yards of Asphalt Paving as measured in the two-dimensional plan view installed and minimum thickness as verified by the Road Thickness Survey as required by Section 01050 – Field Engineering.
2. Payment: The unit price bid for this item will be full compensation for all labor, materials, tools, equipment, supervision required to furnish and install the ABC Paving as shown on the drawings and all other work required or incidental to the satisfactory completion of all work under

this item for which payment is not provided under other items in the bid form.

Item 16: Sidewalk

1. Measurement: The quantity of Sidewalk which will be paid for under this item will be the actual number of square yards of Sidewalk as measured in the two-dimensional plan view installed and minimum thickness of 4-inches.
2. Payment: The unit price bid for this item will be full compensation for all labor, materials, tools, equipment, and supervision required to furnish and install the Sidewalk as shown on the drawings and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 17: Concrete Scale Ramps

1. Measurement: The quantity of Scale Ramps to be paid for under this time will be the actual number of complete Scale Ramps installed as shown on the Drawings and accepted by the ENGINEER.
2. Payment: The unit price for the Scale Ramp shall be full compensation for all labor, materials, tools, equipment, supervision to furnish and install the Scale Ramp as shown in the Drawings and specified herein, including but not limited to, excavation and backfill, subgrade preparations, aggregate, geotextile, compaction, surveying, testing and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 18: Concrete Scale Foundation/Washout Slab

1. Measurement: The quantity of Concrete Scale Foundation/Washout Slabs to be paid for under this time will be the actual number of complete Concrete Scale Foundation/Washout Slab installed as shown on the Drawings and per Manufacturer's approved foundation plan and as accepted by the ENGINEER.
2. Payment: The unit price for the Concrete Scale Foundation/Washout Slab shall be full compensation for all labor, materials, tools, equipment, supervision to furnish and install the Concrete Scale Foundation/Washout Slab as shown in the Drawings and specified herein, including but not limited to, excavation and backfill, subgrade preparations, aggregate, geotextile, compaction, reinforcement steel, surveying, testing and all other work required or incidental to the satisfactory completion of all work under this item for which payment is

not provided under other items in the bid form. Contractor shall provide all engineering, labor, materials, tools, equipment and incidentals required for the design and installation of the scales structural foundation system.

Item 19: Scales

1. Measurement: The quantity of Scales to be paid for under this time will be the actual number of complete Scales installed as shown on the Drawings and per Manufacturer's instructions and as accepted by the ENGINEER.
2. Payment: The unit price for this item will be full compensation required to furnish and install scales as shown on the Drawings and specified herein, including but not limited to: scales with concrete decking and rub rails, electrical conduit and all else incidental to the work for which payment is not provided under other items in the bid form. Contractor shall provide all engineering, labor, materials, tools, equipment and incidentals required for the design and installation of the scales.

Item 20: Stabilization

1. Measurement: The quantity of Stabilization which will be paid for under this item will be the actual number of square yards stabilized as measured in place by computing the two-dimensional plan area of the limits of the Stabilization performed.
2. Payment: The unit prices bid for this item will be full compensation for providing all labor, materials, tools, equipment, supervision required to perform all work required to successfully complete the stabilization of disturbed areas as shown on the Drawings and specified herein, and the establishment of an acceptable vegetation (mix of grasses) as inspected and approved by the ENGINEER.

Item 21: Bollards

1. Measurement: The quantity of Bollards to be paid for under this item will be the actual number of Bollards installed as shown on the Drawings and specified herein and accepted by the ENGINEER.
2. Payment: The unit price bid for this item will be full compensation for Bollards installed as shown on the Drawings and specified herein including but not limited to labor; materials; installation; site restoration; and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 22: Water Service

1. The lump sum price bid for this item will be full compensation for all labor, materials, tools, equipment, supervision and incidentals required to install the 1-inch Water Service in accordance with the City of Hickory Engineering Department Manual of Practice, including valves, valve boxes, water service tap, meter box, water service line, and other appurtenances for which payment is not provided under other items in the bid form.

Item 23: Sewer Service Septic System

1. The lump sum price bid for this item will be full compensation for all labor, materials, tools, equipment, supervision and incidentals required to permit and install the Sewer Service Septic System in accordance with the Catawba County Health Department Standards, including surveying, piping, septic tank, and drain field and other appurtenances for which payment is not provided under other items in the bid form.

Item 24: Chain Link Fence and Gates

1. Measurement: The quantity of Chain Link Fence and Gates to be paid for under these items will be the actual number of linear feet of Fence, including Gates, in place measured horizontally along the fence by Contractor's final survey.
2. Payment: The unit price bid for this item will be full compensation for all labor, materials, fence alignment, clearing as necessary to install the fencing, concrete foundation, tools, equipment, supervision, and incidentals to furnish and install the chain link fence as shown on the Drawings and specified herein.

Item 25: Pavement Striping

1. The lump sum price bid for this item will be full compensation for all labor, materials, tools, equipment, supervision and incidentals required to install pavement striping accordance with the NCDOT Standards, including surveying, surface preparation, and other appurtenances for which payment is not provided under other items in the bid form

Item 26: Concrete Walls/Foundations (Tire Pad)

1. The lump sum price for Concrete Walls/Foundations (Tire Pad) shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Concrete Walls/Foundations (Tire Pad) as shown in the Drawings S.1, S.2, and S.3 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided

under other items in the bid form.

Item 27: Concrete Slab (Tire Pad)

1. The lump sum price for Concrete Slab (Tire Pad) shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Concrete Slab (Tire Pad) as shown in the Drawings S1.1, S1.2, and S1.3 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 28: PEMB Canopy

1. The lump sum price for PEMB Canopy shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for engineering, furnishing and installing the PEMB Canopy as shown in the Drawings B1.1, B1.2, and B1.3 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 29: General Conditions-Building

1. The lump sum price for General Conditions-Building shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the General Conditions-Building as shown in the Drawings G101-AS104 and S101-S102 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 30: Concrete

1. The lump sum price for Concrete shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Concrete as shown in the Drawings G101-AS104 and S101-S102 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 31: Masonry

1. The lump sum price for Masonry shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Masonry as shown in the Drawings G101-AS104 and S101-S102 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 32: Steel Carpentry

1. The lump sum price for Steel Carpentry shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Steel Carpentry as shown in the Drawings G101-AS104 and S101-S102 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 33: Moisture & Thermal Protection

1. The lump sum price for Moisture & Thermal Protection shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Moisture & Thermal Protection as shown in the Drawings G101-AS104 and S101-S102 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 34: Door, Windows, & Glass

1. The lump sum price for Doors, Windows, & Glass shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Doors, Windows, & Glass as shown in the Drawings G101-AS104 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 35: Finishes

1. The lump sum price for Finishes shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Finishes as shown in the Drawings G101-AS104 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 36: Specialties

1. The lump sum price for Specialties shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Specialties as shown in the Drawings G101-AS104 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 37: Plumbing

1. The lump sum price for Plumbing shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Plumbing as shown in the Drawings P001-P101 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 38: Mechanical

1. The lump sum price for Plumbing shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Plumbing as shown in the Drawings M001 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 39: Electrical

1. The lump sum price for Electrical shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Electrical as shown in the Drawings E101-E201 and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

Item 40: Miscellaneous Work & Cleanup

1. The lump sum price for Miscellaneous Work & Cleanup shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required to perform work described in Section 02901 and as shown on the Drawings, and any other work not specifically included for payment under any other item but obviously necessary to complete the Contract.

Item 41: Landscape Buffer

1. The lump sum price for Landscape Buffer shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required for furnishing and installing the Landscape Buffer as shown in the Drawings and all other work required or incidental to the satisfactory completion of all work under this item for which payment is not provided under other items in the bid form.

END OF SECTION

SECTION 01026
SCHEDULE OF VALUES

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Submit to the ENGINEER a Schedule of Values allocated to the various portions of the Work as listed in the Bid Form within 14 days after the effective date of the Agreement.
- B. Upon request of the ENGINEER, support the values with data that will substantiate their correctness.
- C. The accepted Schedule of Values shall be used as the basis for the CONTRACTOR'S Applications for Progress Payments.

1.02 RELATED REQUIREMENTS

- A. Notice to Bidders
- B. Bid Form
- C. Construction Contract
- D. Instructions to Bidders and General Conditions
- E. Supplementary General Conditions
- F. Section 01027: Application for Payment

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES

- A. CONTRACTOR'S standard forms and automated printout will be considered for approval by the ENGINEER upon CONTRACTOR'S request. Identify schedule with:
 - 1. Title of PROJECT and location.
 - 2. ENGINEER and PROJECT number.
 - 3. Name and Address of CONTRACTOR.
 - 4. Contract designation.
 - 5. Date of submission.
- B. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction and shall include a breakdown of all Lump Sum Bid Items. At a minimum the component parts listed in the bid form shall be used.
- C. For each major line-item list sub-values of major products or operations under the item.
- D. For the various portions of the Work:

1. Each item shall include a directly proportional amount of the CONTRACTOR'S overhead and profit.
2. For items on which progress payments will be requested for stored materials, break down the value into:
 - a. The cost of the materials, delivered and unloaded, with taxes paid. Paid invoices are required for materials upon request by the ENGINEER.
 - b. The total installed value.

E. The sum of all values listed in the schedule shall equal the total Contract Sum.

1.04 SUBSCHEDULE OF UNIT MATERIAL VALUES

- A. Submit a sub-schedule of unit costs and quantities for:
 1. Products on which progress payments will be requested for stored products.
- B. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.
- C. The unit quantity for bulk materials shall include an allowance for normal waste.
- D. The unit values for the materials shall be broken down into:
 1. Cost of the material, delivered and unloaded at the site, with taxes paid.
 2. Copies of invoices for component material shall be included with the payment request in which the material first appears.
 3. Paid invoices shall be provided with the second payment request in which the material appears or no payment shall be allowed and/or may be deleted from the request.
- E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

PART 2: PRODUCTS (Not Used)

PART 3: EXECUTION (Not Used)

END OF SECTION

SECTION 01027

APPLICATIONS FOR PAYMENT

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Submit Applications for Payment to the ENGINEER in accordance with the schedule established by Conditions of the Contract and Agreement between OWNER and CONTRACTOR.
- B. The accepted Schedule of Values, Section 01026, shall be used as the basis for the CONTRACTOR'S Application for Payment.

1.02 RELATED WORK

- A. Agreement
- B. Instructions to Bidders and General Conditions
- C. Supplementary General Conditions
- D. Section 01025: Measurement and Payment
- E. Section 01026: Schedule of Values
- F. Section 01036: Change Order Procedures
- G. Section 01050: Field Engineering
- H. Section 01310: Construction Schedule
- I. Section 01380: Construction Photographs
- J. Section 01700: Contract Closeout
- K. Section 01720: Project Record Documents

1.03 SUBMITTALS

- A. CONTRACTOR shall submit sample Application for Payment Form for approval by the OWNER prior to submittal of the first Application for Progress Payment
- B. Submit Application for Payment and continuation sheets in format consistent with Section 01026 – Schedule of Values and approved by the OWNER providing complete documentation of all items for which payments is requested. The Application for Payment form and continuation sheets shall be prepared on 8-1/2-inch by 11-inch page. Each Application for Payment submittal shall include an Excel Spreadsheet file.

Electronic submittals (portable document format) may be used upon request and approval by the ENGINEER or as agreed to in the Pre-Construction Meeting.

- C. Provide a project status report consisting of construction drawing sheets (.pdf) illustrating working areas, progress status, completed areas and tasks. Provide construction photographs in accordance with Section 01380.
- D. Provide construction photographs in accordance with Section 01380

1.04 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form:

- 1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.
- 2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.
- 3. Execute certification with signature of a responsible officer of Contract firm.

B. Continuation Sheets:

- 1. Fill in total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.
- 2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored.
 - a. Round off values to nearest dollar, or as specified for Schedule of Values.
- 3. List each Change Order executed prior to date of submission, at the end of the continuation sheets.
 - a. List by Change Order Number and description, as for an original component item of work.
- 4. To receive approval for payment on component material stored on site, submit copies of the original paid invoices with the application for payment.

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

- A. When the OWNER or ENGINEER requires substantiating data, CONTRACTOR shall submit suitable information, with a cover letter identifying:
 - 1. Project.

2. Application number and date.
 3. Detailed list of enclosures.
 4. For stored products:
 - a. Item number and identification as shown on application.
 - b. Description of specific material.
- B. Submit one copy of data and cover letter for each copy of application.
- C. As a prerequisite for payment, CONTRACTOR is to submit a "Surety Acknowledgement of Payment Request" letter showing amount of progress payment which the CONTRACTOR is requesting.
- D. The CONTRACTOR is to maintain an updated set of drawings to be used as record drawings in accordance with Section 01720. As a prerequisite for monthly progress payments, the CONTRACTOR is to exhibit the updated record drawings and surveys in accordance with Section 01050 for review by the OWNER and the ENGINEER.
- E. CONTRACTOR shall maintain an updated construction schedule in accordance with Section 01310. As a prerequisite for monthly progress payments, CONTRACTOR shall submit the updated construction schedule with the applications for progress payments. If the CONTRACTOR fails to submit the required updated schedule within the time prescribed, the ENGINEER may withhold approval of progress payment estimates until such time as the CONTRACTOR submits the required updated schedule. Submit one copy for each copy of application.
- F. **The CONTRACTOR shall demonstrate, as a prerequisite for monthly progress payments, compliance with all requirements specified in Section 02276 – Erosion and Sediment Control the erosion and sedimentation control plan and associated drawings, to the ENGINEER. If the CONTRACTOR fails to demonstrate compliance the ENGINEER reserves the right to withhold approval of progress payment estimates until such time as the CONTRACTOR demonstrates to the ENGINEER full compliance with Section 02276 – Erosion and Sedimentation Control, the erosion and sedimentation control plan and associated drawings.**
- G. Upon request by the OWNER or ENGINEER, the CONTRACTOR shall provide (as a prerequisite for monthly progress payments) an accumulating cost curve (tabular and diagram) indicating schedule, forecast and actual progress.
- 1.06 PREPARATION OF APPLICATION FOR FINAL PAYMENT
- A. Fill in Application form as specified for progress payments.
- B. Submit all Project Record Documents in accordance with Sections 01050 and 01720.

- C. Follow procedures described in the General Conditions and Section 01700 – Contract Closeout

1.07 SUBMITTAL PROCEDURE

- A. Submit Applications for Payment to the ENGINEER at the times stipulated in the Agreement; transmit Applications in the approved format by the approved method (hard copy and quantity, electronic, etc.).
- B. When the ENGINEER finds Application properly completed and correct, ENGINEER will transmit certificate for payment to OWNER, with copy to CONTRACTOR.
- C. Submit one copy of the invoices for all equipment and materials purchased under the Contract with each Application for Payment current through the previous payment period. Invoices shall show the sales tax paid and shall be used by the OWNER for recovery of taxes.

PART 2: PRODUCTS (Not Used)

PART 3: EXECUTION (Not Used)

END OF SECTION

SECTION 01030

SPECIAL PROJECT PROCEDURES

PART 1: GENERAL

1.01 General

- A. Carefully coordinate and conduct all work in strict accordance with Federal, State, and County requirements and standards.

1.02 LINES AND GRADES

- A. The CONTRACTOR shall be responsible for establishing all lines and measurements necessary for proper prosecution and control of the work. Available horizontal and vertical controls are shown on the Drawings.

1.03 ACCESS AND DRAINAGE

- A. The CONTRACTOR shall provide and maintain adequate access to and throughout the site and shall keep all natural drainage and water courses unobstructed or provide equal courses effectively placed. He shall maintain the access and drainage facilities in accordance with their original condition. The OWNER assumes no responsibility for the placement, condition or maintenance of any haul roads, access roads or structures that may be used by the CONTRACTOR in the performance of his work.
- B. Truck traffic shall be routed over roads which will result in the least effect on traffic and nuisance to the public and Nash County Landfill Operations. All material shall be loaded and hauled in a manner which will prevent the loss of any portion of the load in transit, including covering, if necessary.
- C. Landfilling operations will continue at the facility. Proper safety measures, such as signs, barricades, and other means of traffic guidance, shall be implemented to ensure that the safety of these facilities is not jeopardized and that operations are not in any way disrupted.

1.04 RIGHT-OF-WAYS

- A. Work performed in RIGHT-OF-WAYS (R-O-W) shall be subject to the provisions of the R-O-W agreements. In general, these easements provide for restoring the property to the condition existing before construction began, except where otherwise noted on the Plans.

1.05 PROVISIONS FOR THE CONTROL OF DUST

- A. Sufficient precautions shall be taken during construction to minimize and suppress dust. Water or other methods as approved shall be applied as necessary to maintain moist conditions and avoid the generation of dust. Dust suppression activities shall not be interrupted due to equipment breakdown; backup equipment shall be readily available.

1.06 LOCATION, PROTECTION AND MAINTENANCE OF EXISTING UTILITIES, STRUCTURES AND PROPERTY

- A. Existing utilities are located and are operating in the construction area. CONTRACTOR shall contact the office of each utility operator and ascertain the extent of specific service areas. CONTRACTOR shall contact the North Carolina 811 Call system (Dial 811 or 1-800-632-4949), at least 48 hours prior to commencement of work.
- B. The location of existing utilities across or along the line of the proposed work is not necessarily shown on the Drawings and where shown is only approximately correct. The CONTRACTOR shall locate all underground lines and structures prior to excavation.
- C. The CONTRACTOR shall assume full responsibility for the protection and restoration of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. CONTRACTOR shall carefully support and protect all such structures and utilities from injury. Damages resulting from the construction operations shall be repaired by CONTRACTOR.
- D. The CONTRACTOR shall fully cooperate at all times with the utility owners to maintain the operation of existing utilities with the least amount of interference and interruption possible. Continuous service, public health and safety considerations shall exceed all others and the CONTRACTOR'S schedule, plans and work shall at all times be subject to alteration and revision if necessary, for these considerations.
- E. Temporary support, adequate protection and maintenance of all underground and surface utility installations and structures, drains, sewers, and other obstructions encountered shall be provided as required by the CONTRACTOR. Arrange and pay all costs for required support of utility poles and other structures as required by the utility owners prior to excavation.
- F. Trees, shrubbery, fences, poles, signs and all other property shall be protected to the extent practicable.
- G. Wetland areas shall not be disturbed.

1.07 RELOCATION OF UTILITIES AND STRUCTURES

- A. The CONTRACTOR shall be responsible for the temporary or permanent relocation of structures and utilities, including but not limited to poles, signs, fences, hydrants, valves, piping, conduits and drains that interfere with the positioning of the Work as shown on the Drawings.
- B. No relocations of utilities shall be made without approval of the owner of the utility.
- C. All valve boxes and manhole frames and covers in intersections and elsewhere shall be adjusted as required to be flush with the final pavement surface.

1.08 CLAIMS FOR PROPERTY DAMAGE

- A. Upon notification by the ENGINEER, the CONTRACTOR shall investigate each claim for property damage and shall file, within ten (10) days of such notification, a statement with ENGINEER setting forth all facts and details relative to such claim.

1.09 CARE AND PROTECTION OF PROPERTY

- A. The CONTRACTOR shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the CONTRACTOR, such property shall be restored by the CONTRACTOR, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the ENGINEER.
- B. All driveways, sidewalks, curb and gutters disturbed by the CONTRACTOR'S operations shall be restored to their original condition in accordance with SCDOT and County requirements.
- C. All fences, signs, mailboxes, and other physical features shall be protected and restored in a workmanlike manner by the CONTRACTOR. Fences and other features removed by the CONTRACTOR shall be replaced as soon as conditions permit. All grass areas beyond the limits of construction that have been damaged by the CONTRACTOR shall be re-graded and restored to their original condition.
- D. All highways and roads that become littered or soiled by the CONTRACTOR from hauling equipment and/or project materials to or from the project site shall be maintained clean. Signs indicating construction traffic shall be installed at the entrances to the Project Area.

- E. If applicable, during the hauling of off-site borrow material onto the site the entrance road to the landfill from highway 90 to the maintenance building shall be cleaned by sweeping as necessary, at direction of the ENGINEER or at minimum at the end of every work week.

1.10 GUARANTEE

- A. Work on this PROJECT shall be guaranteed in accordance with requirements of Article 13 of the General Conditions. Work found to be defective within 1 year after the date of Substantial Completion shall be corrected or replaced in accordance with the General Conditions.

1.11 WEATHER PREPAREDNESS PLANNING

- A. Within fifteen (15) days of the date of Notice to Proceed, the CONTRACTOR shall submit to the ENGINEER a Hurricane Preparedness Plan. The plan should outline the necessary measures which the CONTRACTOR proposes to perform at no additional cost to the OWNER in the event of a hurricane warning. Such measures shall be in accordance with state and local requirements.
- B. In the event of inclement weather, the CONTRACTOR will, and will cause Subcontractors, to protect carefully the Work and materials against damage or injury from the weather at no additional cost to the OWNER. If, in the opinion of the ENGINEER, any portion of the 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, such Work and materials shall be removed and replaced at the expense of the CONTRACTOR.

1.12 DAMAGE DUE TO HIGH WATER

- A. The CONTRACTOR shall hold himself responsible for all damage done to the Work by heavy rains or flood and CONTRACTOR shall take all reasonable precautions to provide against damages in a permissible manner.

1.13 EMERGENCIES

- A. The CONTRACTOR shall at all times after regular working hours, including weekend and holidays, maintain a telephone where the CONTRACTOR or his representative can be reached on an emergency basis. The CONTRACTOR shall be prepared to act to correct conditions on the site deemed to constitute an emergency by the ENGINEER, his representative, or the ENGINEER. The CONTRACTOR shall give the ENGINEER prompt written notice of all significant changes in the Work or deviations from the Contract caused thereby. If a condition on the site requires attention after working hours, either the

ENGINEER, his representative, or local authority shall call the CONTRACTOR at the emergency telephone number, identify himself and describe the emergency condition. The CONTRACTOR is expected to dispatch men and equipment to adequately institute corrective measures within two (2) hours. If the CONTRACTOR or his representative cannot be reached at the emergency number after a reasonable time (1/2 hour), the ENGINEER shall have the right to immediately initiate corrective measures, and the cost of such measures shall be borne by the CONTRACTOR.

- B. Emergency phone numbers (fire, medical, police) shall be posted at the CONTRACTOR'S phone and its location known to all.
- C. Accidents or incidents shall be reported immediately to the ENGINEER by phone or in accordance with the OWNER'S emergency response plan or procedures.
- D. All accidents or incidents shall be documented and a fully detailed written report, including police reports if produced, submitted to the ENGINEER after each occurrence.

PART 2: PRODUCTS (Not Used)

PART 3: EXECUTION (Not Used)

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END OF SECTION

SECTION 01036

CHANGE ORDER PROCEDURES

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED

- A Promptly implement change order procedures.
 - 1. Provide full written data required to evaluate changes.
 - 2. Maintain detailed records of work done on a time-and-material/ force account basis.
 - 3. Provide full documentation to the ENGINEER on request.
- B Designate in writing the member of CONTRACTOR'S organization:
 - 1. Who is authorized to accept changes in the Work.
 - 2. Who is responsible for informing others in the CONTRACTOR'S employ of the authorization of changes in the Work.
- C OWNER will designate in writing the person who is authorized to execute Change Orders.

1.02 RELATED REQUIREMENTS

- A Construction Contract
- B Instructions to Bidders and General Conditions.
- C Supplementary General Conditions
- D Section 01027: Application for Payment.
- E Section 01310: Construction Schedules.
- F Section 01026: Schedule of Values.
- G Section 01630: Substitutions and Product Options.
- H Section 01720: Project Record Documents.

1.03 DEFINITIONS

- A See Section Construction Contract and Instructions to Bidders and General Conditions.

1.04 PRELIMINARY PROCEDURES

- A OWNER or ENGINEER may initiate changes by submitting a Request for Proposal (RFP) to CONTRACTOR. Request will include:
1. Detailed description of the Change, Products, and location of the change in the PROJECT.
 2. Supplementary or revised Drawings and Specifications.
 3. The projected time span for making the change, and a specific statement as to whether overtime work is, or is not, authorized.
 4. A specific period of time during which the requested price will be considered valid.
 5. Such request is for information only, and is not an instruction to execute the changes, nor to stop work in progress.
- B CONTRACTOR may initiate changes by submitting a written notice to ENGINEER, containing:
1. Description of the proposed changes.
 2. Statement of the reason for making the changes.
 3. Statement of the effect on the Contract Sum and the Contract Time.
 4. Statement of the effect on the work of separate contractors.
 5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

1.05 WORK DIRECTIVE CHANGE (WDC)

- A In lieu of a Request for Proposal (RFP), OWNER or ENGINEER may issue a Work Directive Change (WDC) for CONTRACTOR to proceed with a change for subsequent inclusion in a Change Order.
- B Each WDC will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change, and will designate the method of determining any change in the Contract Sum and any change in Contract Time.
- C OWNER and ENGINEER will sign and date the WDC as authorization for the CONTRACTOR to proceed with the changes.

- D CONTRACTOR may sign and date the WDC indicate agreement with the terms therein.

1.06 DOCUMENTATION OF PROPOSALS AND CLAIMS

- A Support each quotation for a lump-sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow ENGINEER to evaluate the quotation.
- B On request, provide additional data to support time and cost computations.
 - 1. Labor required.
 - 2. Equipment required.
 - 3. Products required.
 - a. Recommended source of purchase and unit cost.
 - b. Quantities required.
 - 4. Taxes, insurance and bonds.
 - 5. Credit for work deleted from Contract, similarly documented.
 - 6. Overhead and profit.
 - 7. Justification for any change in Contract Time.
- C Support each claim for additional costs, and for work done on a time-and-material/force account basis, with documentation as required for a lump-sum proposal, plus additional information.
 - 1. Name of the OWNER'S authorized agent who ordered the work, and date of the order.
 - 2. Dates and times work was performed, and by whom.
 - 3. Time record, summary of hours worked, and hourly rates paid.
 - 4. Receipts and invoices for:
 - a. Equipment used, listing dates and times of use.
 - b. Products used, listing of quantities.
 - c. Subcontracts.
- D Document requests for substitutions for Products as specified in Section 01630.

1.07 PREPARATION OF CHANGE ORDERS AND FIELD ORDERS

- A ENGINEER will prepare each Change Order and Field Order.
- B Forms: See end of this section for forms.
- C Change Order will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.
- D Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.
- E Field Order will describe interpretations or clarifications of Contract Documents, order minor changes in the Work, and/or memorialize trade-off agreements.
- F Field Order work will be accomplished without change in the Contract Sum, Contract Time, and/or claims for other costs.

1.08 LUMP-SUM/FIXED PRICE CHANGE ORDER

- A Content of Change Orders will be based on, either:
 - 1. ENGINEER'S Proposal Request and CONTRACTOR'S responsive Proposal as mutually agreed between OWNER and CONTRACTOR.
 - 2. CONTRACTOR'S Proposal for a change, as recommended by ENGINEER.
- B OWNER and ENGINEER will sign and date the Change Order as authorization for the CONTRACTOR to proceed with the changes.
- C CONTRACTOR will sign and date the Change Order to indicate agreement with the terms therein.

1.09 UNIT PRICE CHANGE ORDER

- A Content of Change Orders will be based on, either:
 - 1. ENGINEER'S definition of the scope of the required changes.
 - 2. CONTRACTOR'S Proposal for a change, as recommended by ENGINEER.
 - 3. Survey of completed work.
- B The amounts of the unit prices to be:
 - 1. Those stated in the Agreement.

2. Those mutually agreed upon between OWNER and CONTRACTOR.
- C When quantities of each of the items affected by the Change Order can be determined prior to start of the work:
1. OWNER and ENGINEER will sign and date the Change Order as authorization for CONTRACTOR to proceed with the changes.
 2. CONTRACTOR will sign and date the Change Order to indicate agreement with the terms therein.
- D When quantities of the items cannot be determined prior to start of the work:
1. ENGINEER or OWNER will issue a WDC directing CONTRACTOR to proceed with the change on the basis of unit prices, and will cite the applicable unit prices.
 2. At completion of the change, ENGINEER will determine the cost of such work based on the unit prices and quantities used.
 - a. CONTRACTOR shall submit documentation to establish the number of units of each item and any claims for a change in Contract Time.
 3. ENGINEER will sign and date the Change Order to establish the change in Contract Sum and in Contract Time.
 4. OWNER and CONTRACTOR will sign and date the Change Order to indicate their agreement with the terms therein.
- 1.10 TIME AND MATERIAL/FORCE ACCOUNT CHANGE ORDER/WORK DIRECTIVE CHANGE
- A ENGINEER and OWNER will issue a WDC directing CONTRACTOR to proceed with the changes.
- B At completion of the change, CONTRACTOR shall submit itemized accounting and supporting data as provided in the Article "Documentation of Proposals and Claims" of this Section.
- C ENGINEER will determine the allowable cost of such work, as provided in General Conditions and Supplementary Conditions.
- D ENGINEER will sign and date the Change Order to establish the change in Contract Sum and in Contract Time.
- E OWNER and CONTRACTOR will sign and date the Change Order to indicate their agreement therewith.

1.11 CORRELATION WITH CONTRACTOR'S SUBMITTALS

- A Periodically revise Schedule of Values and Request for Payment forms to record each change as a separate item of Work, and to record the adjusted Contract Sum.
- B Periodically revise the Construction Schedule to reflect each change in Contract Time.
 - 1. Revise sub-schedules to show changes for other items of work affected by the changes.
- C Upon completion of work under a Change Order, enter pertinent changes in Record Documents.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION

WORK CHANGE DIRECTIVE NO.: [Number of Work Change Directive]

Owner:

Owner's Project No.:

Engineer:

Engineer's Project No.:

Contractor:

Contractor's Project No.:

Project:

Contract Name:

Date Issued:

Effective Date of Work Change Directive:

Contractor is directed to proceed promptly with the following change(s):

Description:

[Description of the change to the Work]

Attachments:

[List documents related to the change to the Work]

Purpose for the Work Change Directive:

[Describe the purpose for the change to the Work]

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to:

Notes to User—Check one or both of the following

☐ Non-agreement on pricing of proposed change. ☐ Necessity to proceed for schedule or other reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price: \$ _____ **[increase] [decrease] [not yet estimated].**

Contract Time: _____ days **[increase] [decrease] [not yet estimated].**

Basis of estimated change in Contract Price:

☐ Lump Sum ☐ Unit Price ☐ Cost of the Work ☐ Other

Recommended by Engineer

Authorized by Owner

By:

Title:

Date:

CHANGE ORDER NO.: [Number of Change Order]

Owner:

Engineer:

Contractor:

Project:

Contract Name:

Date Issued:

Owner's Project No.:

Engineer's Project No.:

Contractor's Project No.:

Effective Date of Change Order:

The Contract is modified as follows upon execution of this Change Order:

Description:

[Description of the change]

Attachments:

[List documents related to the change]

Change in Contract Price	Change in Contract Times [State Contract Times as either a specific date or a number of days]
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] from previously approved Change Orders No. 1 to No. [Number of previous Change Order] : \$ _____	[Increase] [Decrease] from previously approved Change Orders No.1 to No. [Number of previous Change Order] : Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] this Change Order: \$ _____	[Increase] [Decrease] this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

Recommended by Engineer (if required)

Accepted by Contractor

By: _____

Title: _____

Date: _____

Authorized by Owner

Approved by Funding Agency (if applicable)

By: _____

Title: _____

Date: _____

FIELD ORDER NO.: [Number of Field Order]

Owner:

Owner's Project No.:

Engineer:

Engineer's Project No.:

Contractor:

Contractor's Project No.:

Project:

Contract Name:

Date Issued:

Effective Date of Field Order:

Contractor is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with Paragraph 11.04 of the General Conditions, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

Specification Section(s):

Drawing(s) / Details (s):

Description:

[Description of the change to the Work]

Attachments:

[List documents supporting change]

Issued by Engineer

By: _____

Title: _____

Date: _____

SECTION 01050
FIELD ENGINEERING

PART 1: GENERAL

1.01 SCOPE OF WORK

- A The CONTRACTOR shall retain the services of a registered land surveyor licensed in the State of North Carolina.
 - 1. Identify existing control points and property line corner stakes indicated on the Drawings, as required.
 - 2. Verify all existing structure locations and all proposed locations.
 - 3. Maintain an accurate location of all buried piping.
 - 4. Provide as-built records for all project grading and project components.

1.02 RELATED WORK

- A Section 01025: Measurement and Payment

1.03 SUBMITTALS

- A Submit name, address and copy of licensure of the registered land surveyor proposed to be used on this PROJECT to the ENGINEER within 15 days of the Notice to Proceed.
- B On request of the ENGINEER, submit documentation to verify accuracy of field engineering work.
- C The CONTRACTOR is required to perform surveys signed and sealed by the registered land surveyor. All surveys shall be tied to the existing permanent survey monuments at the site, as identified on the drawings. These drawings shall be included with, and made a part of, the PROJECT record documents. The CONTRACTOR shall also electronically submit each survey in an AutoCAD release compatible with the ENGINEER's design software and/or Terramodel software format. All elevation information in the file must be at appropriate 3-D elevation. All entities shall be placed on layer names which adequately describe the entity being mapped.
- D The CONTRACTOR is required to perform the following surveys and submit to the ENGINEER.
 - 1. The CONTRACTOR shall provide certified topographic map surveys and Digital Terrain Models (DTM) of the following:
 - a. Pre-work Survey: Immediately following clearing and grubbing and stripping and prior to starting excavation and/or backfill. Pre-Work Survey shall include surveys of existing surface utilities.

- b. Subgrade Plan Survey: Immediately following completion of excavation and backfill and prior to starting placement of the subsequent layer (concrete, asphalt paving, stone road paving).
- c. Post-work Survey (as-built): Following completion of all work.

The surveys shall meet the following criteria: 1" = 100' scale reproducible plot produced at national map accuracy standards for 1" = 100' scale maps with 2' contour interval.

The DTM must contain adequate 3-D points and 3-D break lines required to accurately model the photographed surface to within above stated accuracy. The DTM must also provide a 2-D polyline defining the limits of the area surveyed. The points, break lines, and survey limits line shall be on separate layers.

- 2. Certified survey of the limits of work, and surface and subsurface structures installed by CONTRACTOR shall be provided after completion of the PROJECT and shall include the following:
 - a. Limits of Work – Including, but not limited to:
 - i. limits of cleared and grubbed, stripped
 - ii. limits of road pavement
 - iii. limits of seeded and mulched
 - b. Surface Facilities – Including, but not limited to:
 - i. Rip-rap aprons, ditches and outlet energy dissipaters
 - ii. Stormwater management structures (ponds, basins, pipes, pipe inverts, outlet devices/structures, ditches, berms)
 - iii. Collection pipes and lines (drainage aggregate limits), header pipes, stub-outs, tie-ins and clean-outs
 - iv. Manholes and pumping systems
 - v. Any other surface facilities installed by the Contractor.
 - c. Subsurface Facilities – Including, but not limited to:
 - i. Pipes (indicating alignment and invert elevations, size, elbows, valves, stub-outs, tie-ins, clean-outs, etc.)
 - ii. Pipe drop inlets (including grate elevations and pipe inverts)
 - iii. Pump station pipe invert elevations
 - iv. Force main pipe alignment
 - v. Buried electrical conduit
 - vi. Any other subsurface facilities installed by the Contractor.

4. The OWNER reserves the right to withhold final payment on any or all work items requiring confirmation as-built surveys until such time that the final as-built survey is submitted and approved by the OWNER.

1.04 QUALIFICATIONS OF SURVEYOR and EQUIPMENT

- A Registered land surveyor of the discipline required for the specific service on the PROJECT, currently licensed in the State of the North Carolina.
- B All survey instruments should be capable of reading to a precision of 0.01 ft and with a setting accuracy of 20 sec. (5.6×10^{-3} degrees).

1.05 SURVEY REFERENCE POINTS

- A Existing basic horizontal and vertical control points for the PROJECT are those designated on Drawings.
- B Locate and protect control points prior to starting site work and preserve all permanent reference points during construction.
 1. Make no changes or relocations without prior written notice to the ENGINEER.
 2. Report to the ENGINEER when any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations.
 3. Require surveyor to correctly replace PROJECT control points which may be lost or destroyed.
 - a. Establish replacements based on original horizontal and vertical survey control.

1.06 PROJECT SURVEY REQUIREMENTS

- A Establish a minimum of two permanent benchmarks on site, referenced to data established by survey control points.
 1. Record locations, with horizontal and vertical data, on PROJECT Record Documents.
 2. Clearly identify the benchmarks in the field with marker post. Install protection around the benchmarks.
- B Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:
 1. Site improvements

- a. Stakes for grading, fill and topsoil placement.
 - b. Utility slopes and invert elevations.
- C From time to time, verify layouts by same methods.
- D Establish all lines and grades prior to construction of line work for all pipelines at 100-ft increments and at defined breaks in grade.

1.07 RECORDS

- A Maintain a complete, accurate log of all control and survey work as it progresses.
- B Update the PROJECT Record Drawings on a monthly basis based on the work performed during the month ending at the pay request as a condition for approval of monthly progress payment requests.
- C Maintain an accurate record of piping changes, revisions, and modifications.
- D All field survey notes will be retained by the Surveyor. The results from the field surveys will be documented on a set of Survey Record Drawings signed and sealed by a registered Professional Engineer or Professional Land Surveyor licensed in the State of North Carolina for submittal to the ENGINEER. The CONTRACTOR shall certify to the ENGINEER that the results of the survey demonstrate compliance with the Contract Documents. These drawings shall, at a minimum, show the final elevations and locations of all surfaces and appurtenances surveyed.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED

- A The ENGINEER shall schedule and administer a pre-construction meeting, periodic progress meetings, and specially called meetings throughout progress of the work. The ENGINEER shall:
 - 1. Prepare agenda for meetings.
 - 2. Make physical arrangements for meetings.
 - 3. Preside at meetings.
 - 4. Keep a record of the meeting, to include significant proceedings and decisions.
 - 5. Reproduce and distribute copies of the record within five working days after each meeting:
 - a. To participants in the meeting.
 - b. To parties affected by decisions made at the meeting.
- B Representatives of the CONTRACTOR, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
- C The CONTRACTOR shall provide an updated schedule at each PROJECT meeting.
- D The CONTRACTOR shall attend meetings to ascertain that work is expedited consistent with Contract Documents and construction schedules.

1.02 RELATED REQUIREMENTS

- A Section 00700: General Conditions.
- B Section 00800: Supplementary Conditions.
- C Section 01310: Construction Schedules.
- D Section 01340: Shop Drawings, Product Data, Working Drawings, and Samples.
- E Section 01720: Project Record Documents

1.03 PRE-CONSTRUCTION MEETING

A The ENGINEER will schedule a pre-construction meeting in accordance with Article 2.8 of the General Conditions.

B Location: A central site, convenient for all parties, designated by the OWNER.

C Attendance:

1. ENGINEER.
2. OWNER Representative.
3. CONTRACTOR'S Superintendent.
4. Major Subcontractors.
5. Major suppliers.
6. Utilities
7. Others as appropriate.

D Agenda:

1. Distribution and discussion of:
 - a. List of major subcontractors and suppliers.
 - b. Projected Construction Schedules.
2. Critical work sequencing.
3. Major equipment deliveries and priorities.
4. Project Coordination.
 - a. Designation of responsible personnel.
 - b. Discussion of the construction management organization.
 - c. Respective duties during construction
 - d. Periodic reporting requirements for test results and construction activities.
5. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.

- c. Submittals.
- d. Change Orders.
- e. Applications for Payment (monthly date of Payment to be determined).
- 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. Safety

1.03 COORDINATION MEETINGS

- A. Coordination Meetings shall occur daily between the Contractor Superintendent, and any other QA/QC staff as necessary. Coordination Meetings shall cover the day's anticipated work areas, QA/QC testing requirements, and troubleshooting. Items discussed in the Coordination Meetings shall be documented in the record of daily observation.

1.04 PROGRESS MEETINGS

- A. The ENGINEER will schedule regular progress meetings. The progress meetings will be held approximately every 14 days or 28 days, depending on work activities, with the first meeting 15 days after the pre-construction meeting or no later than 30 days after the date of Notice to Proceed.
- B. ENGINEER, OWNER, or CONTRACTOR may hold or call meetings as required by progress of the work.
- C. Location of the meetings: PROJECT field office of CONTRACTOR or ENGINEER.
- D. Attendance:

1. OWNER'S Representative
2. ENGINEER
3. RPR
4. CONTRACTOR'S Superintendent
5. Subcontractors as appropriate to the agenda.
6. Suppliers as appropriate to the agenda.
7. Others as appropriate.

E Agenda:

1. Review, approval of minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems, conflicts.
4. Problems which impede Construction Schedule.
5. Review of off-site fabrication, delivery schedules.
6. Measures and procedures to maintain projected schedule.
7. Revisions to Construction Schedule.
8. Progress, schedule, during succeeding work period.
9. Coordination of schedules.
10. Review submittal schedules; expedite as required.
11. Maintenance of quality standards.
12. Pending changes and substitutions.
13. Review proposed changes for:
 - a. Effect on Construction Schedule and on completion date.
 - b. Effect on other contracts of the PROJECT.
14. Construction Schedule
15. Critical/long lead items.

16. Other business.

- F The CONTRACTOR is to attend progress meetings and is to study previous meeting minutes and current agenda items, in order to be prepared to discuss pertinent topics such as deliveries of materials and equipment, progress of the work, etc.
- G The CONTRACTOR is to provide a current submittal log at each progress meeting in accordance with Section 01340.

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULES

PART 1: GENERAL

1.01 WORK INCLUDED

- A Promptly following award of the Contract prepare and submit to the ENGINEER construction progress schedules for the Work, with sub-schedules of related activities which are essential to its progress.
- B Submit progress schedules electronically in .pdf on a monthly basis, at minimum.
- C Submit once per week via email, short-term forecast detailing work tasks planned, update on work performed to date and task performed previous week.

1.02 RELATED REQUIREMENTS

- A. Section 00700: General Conditions.
- B. Section 00800: Supplemental Conditions
- C. Section 01010: Summary of Work.
- D. Section 01027: Application for Payment
- E. Section 01200: Project Meetings.
- F. Section 01340: Shop Drawings, Product Data and Samples.
- G. Section 01026: Schedule of Values

1.03 FORM OF SCHEDULES

- A Prepare schedules in the form of a horizontal bar chart.
 - 1. Provide separate horizontal bar for each task or operation for each item of work at minimum, in order corresponding to the Bid Form sub-schedules of work items may be necessary and shall be provided upon request.
 - 2. Horizontal time scale: In weeks from start of construction and identify the first workday of each month.
 - 3. Scale and spacing: To allow space for notations and future revisions.

B Identification of listings: By construction bid item.

1.04 CONTENT OF SCHEDULES

A Construction Progress Schedule:

1. Show the complete sequence of construction by activity.
2. Show the dates for the beginning of, and completion of, each contract bid item at minimum and phase of construction in no more than a one-week increment scale. List all contract items and benchmark dates, but not limited to these specifically:
 - a. Notice to Proceed
 - b. Mobilization
 - c. Sub-contracted Work Items
 - d. Surveying
 - e. Submittals
 - f. Erosion and Sedimentation Control Measures
 - g. Excavation and Backfill Installation
 - h. Major Material Deliveries
 - i. Stormwater Management Features
 - j. Building Construction Activities
 - k. Concrete Tire Pad Activities
 - l. Scale Installation
 - m. Seeding and Mulching
 - n. Miscellaneous Work and Cleanup
 - o. Restoration
 - p. Substantial Completion
 - q. Final Completion
 - r. Demobilization
3. Show percentage of completion for each item, as of the first day of each month
4. Upon request, provide cash flow projections (forecast of monthly pay applications) to correspond with the most current construction progress schedule
5. Highlight all activities on the critical path

B. Submittals Schedule for Shop Drawings, Product Data and Samples in accordance with Section 01340. Show:

1. The dates for CONTRACTOR'S submittals.
2. The date submittals will be required for OWNER-furnished products, if applicable.
3. The dates approved submittals will be required from the ENGINEER.

C. A list of all long lead items (equipment, materials, etc.)

1.05 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.
 4. Other identifiable changes.

1.06 SUBMISSIONS

- A Submit initial schedules to the ENGINEER within 5 days after the effective date of the Agreement for review. Re-submit revised schedules within 5 days after receiving review comments.
- B Submit an updated progress schedule at the frequency provided by the ENGINEER at the Pre-Construction Conference.

CONTRACTOR should be prepared at minimum, to submit a progress schedule:

1. With each progress application for payment,
 2. For review at project meetings.
 3. Submit and update progress schedule at every identifiable impact to the completion date, provide an updated construction progress schedule.
- C Submit to the ENGINEER once per week via email, short-term forecast detailing work tasks planned, update on work performed to date and task performed previous week. Project status reports shall include construction drawing sheets (.pdf) illustrating working areas, progress status and completed areas and tasks.

1.07 DISTRIBUTION

- A Distribute copies electronically of the reviewed schedules to:

1. ENGINEER
2. CONTRACTOR'S job site file
3. Subcontractors as applicable; others as directed by the ENGINEER

B Instruct recipients to report promptly to the CONTRACTOR, in writing, any problems anticipated by the projections shown in the schedules.

PART 2: PRODUCTS (Not Used)

PART 3: EXECUTION

3.01 RESPONSIBILITY FOR SCHEDULE COMPLIANCE

A The CONTRACTOR agrees that whenever it becomes apparent from the current monthly schedule that delays to the project schedule have resulted, and hence, that the contract completion date will not be met, he will take some or all of the following actions at no additional cost to the ENGINEER, submitting to the ENGINEER for approval, a written statement of the steps he intends to take to remove or arrest the delay in the approved schedule.

1. Increased construction manpower in such quantities and crafts as will substantially eliminate the backlog of work.
2. Increase the number of working hours per shift, shifts per working days per week, the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate the backlog of work.
3. Re-schedule activities to achieve maximum practical concurrency of accomplishment of activities and comply with the revised schedule.
4. Costs incurred by the OWNER arising from such lengthening of hours, including extended time for the RPR or furnishing of Inspectors, shall be the CONTRACTOR'S responsibility and shall be deducted from monies due him. Failure of the CONTRACTOR to comply with these requirements may be grounds for determination by the ENGINEER that the CONTRACTOR is not progressing at such rates as will ensure completion within the specified time and may result in the termination of the right of the CONTRACTOR to continue the work.

3.02 ADJUSTMENT OF CONTRACT SCHEDULE AND COMPLETION TIME

A If the CONTRACTOR desires to make changes in his method of operating which affect the approved schedule, he shall notify the ENGINEER in writing, stating what changes are proposed and the reason for the change. If the ENGINEER approves these changes, the CONTRACTOR shall revise and submit for approval, without additional

cost to the OWNER, all of the affected portion of the schedule. The schedule shall be adjusted by the CONTRACTOR only after prior approval of his proposed changes by the ENGINEER.

- B The contract completion time will be adjusted only for causes specified in this contract. In the event the CONTRACTOR requests an extension of any contract completion date, he shall furnish such justification and supporting evidence as the ENGINEER may deem necessary for a determination as to whether the CONTRACTOR is entitled to an extension of time under the provisions of this contract. ENGINEER will, after receipt of such justification and supporting evidence make findings of fact and will advise the CONTRACTOR in writing therefore if the ENGINEER finds that the CONTRACTOR is entitled to any extension of any contract completion date under the provisions of this contract, the ENGINEER'S determination as to the total number of days extension shall be based upon the currently approved schedule and on all data relevant to the extension. Such data shall be included in the next monthly updating of the schedule. The CONTRACTOR acknowledges and agrees that actual delays in activities which, according to the schedule, do not affect any contract completion date shown by the critical path in the schedule do not have any effect on the contract completion date or dates, and therefore, will not be the basis for a change.

3.03 ADJUSTMENT BY ENGINEER

- A From time to time it may be necessary for the Contract schedule and/or completion time to be adjusted by the ENGINEER due to the effects of job conditions, acts or omissions of other CONTRACTORS not directly associated with this contract, weather, technical difficulties, unavoidable delays and other enforceable conditions which may indicate schedule adjustments and/or completion time extension. Under such conditions, the ENGINEER shall direct the CONTRACTOR to reschedule the work to reflect the changed conditions, and the CONTRACTOR shall revise his schedule accordingly. Schedule extensions affecting the Contract completion time shall be granted only by the ENGINEER in writing. No additional compensation shall be made to the CONTRACTOR for such schedule changes except for unavoidable overall Contract time extensions beyond the actual completion of all unaffected Work in the Contract, in which case the CONTRACTOR shall take all possible action to minimize any time extension and any additional cost to the Owner.

3.04 COORDINATING SCHEDULES WITH OTHER CONTRACT SCHEDULES

- A Where work is to be performed under this contract concurrently with and/or contingent upon work performed on the same facilities or area under other contracts, the CONTRACTOR'S schedule shall be coordinated with the schedules of the other contracts. The CONTRACTOR shall obtain the schedules of the other appropriate

contracts for the preparation and updating of his schedule and shall make the required changes in his schedule when indicated by changes in corresponding schedules.

- B The OWNER controls the float time in the approved schedule and, therefore, without obligation to extend either the overall completion date or any intermediate completion dates set out in the schedule, the OWNER may initiate changes to the work that absorb float time only. OWNER initiated changes that affect the Critical Path on the approved schedule shall be the sole grounds for extending said completion dates. CONTRACTOR-initiated changes that encroach on the float time identified in the approved schedule may be accomplished with the OWNER'S concurrence. Such changes, however, shall give way to OWNER-initiated changes competing for the same float time.

END OF SECTION

SECTION 01340

SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

PART 1: GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

- A This Section specifies the general methods and requirements of submissions applicable to the following work-related submittals: Shop Drawings, Product Data and Samples. Detailed submittal requirements are specified in the technical specification sections.
- B All submittals shall be clearly identified by reference to Specification Section, Paragraph, Drawing No. or Detail as applicable. Submittals shall be clear and legible and of sufficient size for sufficient presentation of data.
- C All CONTRACTOR submittals shall be submitted directly from the CONTRACTOR, thoroughly reviewed and include signature of the CONTRACTOR stating as such.

1.02 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

A Shop Drawings

1. Shop drawings as specified in individual work Sections include, but are not necessarily limited to, custom-prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shop work manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications, as applicable to the Work.
2. All shop drawings submitted by subcontractors for approval shall be sent directly to the CONTRACTOR for review. The CONTRACTOR shall be responsible for their submission at the proper time to prevent delays in delivery of materials.
3. The CONTRACTOR shall review and check for accuracy and adequacy all subcontractor's shop drawings regarding measurements, size of members, materials, and details to satisfy himself that they conform to the intent of the Drawings and Specifications. Shop drawings found to be inaccurate or otherwise in error should be returned to the subcontractors for correction before submission thereof.
4. All details on shop drawings submitted for approval shall show clearly the relation of all parts to the main members and lines of the structure. Where correct fabrication of the work depends upon field measurements,

such measurements shall be made and noted on the drawings before being submitted for approval.

B Product Data

1. Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the Work.

C Working Drawings

1. When used in the Contract Documents, the term "working drawings" shall be considered to mean the CONTRACTOR'S plans for temporary structures such as temporary bulkheads, support of open cut excavation, support of utilities, ground water control systems, forming and false work; and for such other work as may be required for construction but does not become an integral part of the PROJECT.
2. Working drawings shall be prepared and sealed by a registered Professional Engineer, currently licensed to practice in the State of North Carolina. The CONTRACTOR shall submit a letter of certification from the Professional Engineer stating that he/she has prepared the designs and has verified that the materials/equipment have been installed as designed. No working drawings or calculations/computations relating to the working drawings shall be submitted to the ENGINEER unless specifically requested in writing.

D Samples

1. Samples specified in individual Sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols and units of work to be used by the ENGINEER for independent inspection and testing, as applicable to the Work.

1.03 CONTRACTOR'S RESPONSIBILITIES

A The CONTRACTOR shall thoroughly review shop drawings, product data and samples, including those by sub-contractors, prior to submission to determine and verify the following:

1. Field measurements
2. Field construction criteria
3. Catalog numbers and relative data
4. Conformance with the Specifications

B Each shop drawing, sample and product data submitted by the CONTRACTOR shall have affixed to it the following Certification Statement including the CONTRACTOR'S Company name and signed by the CONTRACTOR:

"Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements."

Shop drawings and product data sheets shall be bound together (electronic .pdf) in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide the ENGINEER a copy of each submittal transmittal sheet for shop drawings, product data and samples at the time of submittal of said drawings, product data and samples to the ENGINEER.

C The CONTRACTOR shall utilize a 10-character submittal identification numbering system in the following manner:

1. The first character shall be a **D, S, P, M, or R**, which represents Shop/Working Drawing and other Product Data (D), Sample (S), Preliminary Submittal (P), Operating/Maintenance Manual (M), or Request for Information (R).
2. The next five digits shall be the applicable Specification Section Number.
3. The next three digits shall be the numbers 001-999 to sequentially number each initial separate item or drawing submitted under each specific Section number.
4. The last character shall be a letter, A-Z, indicating the submission, or resubmission of the same Drawing, i.e., "A=1st submission, B=2nd submission, C=3rd submission, etc. A typical submittal number would be as follows:

D-03300-008-B

D – Shop Drawing

03300 – Specification Section for Concrete

008 – The eighth initial submittal under this specification section

B – The second submission (first resubmission) of that particular shop drawing

- D Notify the ENGINEER in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents.
- E The review and approval of shop drawings, samples or product data by the ENGINEER shall not relieve the CONTRACTOR from his/her responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the CONTRACTOR and the ENGINEER or OWNER will have no responsibility therefore.
- F No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the CONTRACTOR'S risk. The OWNER will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.
- G PROJECT work, materials, fabrication, and installation shall conform with Contract Documents and approved shop drawings, applicable samples, and product data.

1.04 SUBMISSION REQUIREMENTS

- A Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the Work or in the work of any other CONTRACTOR.
- B Each submittal, appropriately coded, will be returned within 14 calendar days following receipt of submittal by the ENGINEER.
- C Number of submittals required:
 - 1. Shop Drawings and Product Data as defined in Paragraph 1.02:
Generally, electronic submittals (.pdf, email) are suitable unless otherwise noted or as determined in the Pre-Construction Meeting.
 - 2. Samples: Submit the number stated in the respective Specification Sections or as otherwise requested by the ENGINEER.

3. Quality Control Data: Submit the number stated in the respective Specification Sections or as otherwise requested by the ENGINEER. At minimum, CONTRACTOR shall provide electronic, signed copies of all QC data in addition to signed certified hard copies for Certification Reporting once approved and accepted.

D Submittals shall contain:

1. The date of submission and the dates of any previous submissions.
2. The PROJECT title and number.
3. CONTRACTOR identification.
4. The names of:
 - a. CONTRACTOR
 - b. Supplier
 - c. Manufacturer
 - d. Sub-contractor or installer if not CONTRACTOR
5. Identification of the product, with the specification section number, page and paragraph(s).
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of the Work or materials.
8. Applicable standards, such as ASTM or Federal Specification numbers.
9. Identification of deviations from Contract Documents.
10. Identification of revisions on re-submittals.
11. A blank space for CONTRACTOR and ENGINEER signatures.

1.05 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

A The review of shop drawings, data, and samples will be for general conformance with the design concept and Contract Documents. They 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, and materials;
3. as approving departures from details furnished by the ENGINEER, except as otherwise provided herein.

- B The CONTRACTOR remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.
- C If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which ENGINEER finds to be in the interest of the OWNER and to be so minor as not to involve a change in Contract Price or time for performance, the ENGINEER may return the reviewed drawings without noting an exception.
- D Submittals will be returned to the CONTRACTOR under one of the following codes.

Code 1: "REVIEWED" is assigned when there are no notations or comments on the submittal. When returned under this code the CONTRACTOR may release the equipment and/or material for manufacture.

Code 2: "FURNISH AS CORRECTED". This code is assigned when a confirmation of the notations and comments IS NOT required by the CONTRACTOR. The CONTRACTOR may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.

Code 3: "REVISE AND RE-SUBMIT". This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. The CONTRACTOR may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the ENGINEER within 10 calendar days of the date of the ENGINEER'S transmittal requiring the resubmittal.

Code 4: "REJECTED" is assigned when the submittal does not meet the intent of the Contract Documents. The CONTRACTOR must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.

Code 5: "SUBMIT SPECIFIC ITEM" is assigned where there are comments attached to the returned submittal which provide additional data to aid the CONTRACTOR.

Codes 1 through 4 designate the status of the reviewed submittal with Code 5 showing there has been an attachment of additional data.

In each case above, ENGINEER does not assume responsibility for accuracy of the product referenced on the submittal. CONTRACTOR is responsible for complying with the Contract Documents in all submittals unless so stated by the ENGINEER.

- E Re-submittals will be handled in the same manner as first submittals. On re-submittals the CONTRACTOR shall direct specific attention, in writing on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the ENGINEER, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the CONTRACTOR. The CONTRACTOR shall make corrections to any work done because of this type revision that is not in accordance to the Contract Documents as may be required by the ENGINEER.
- F Partial submittals may not be reviewed. The ENGINEER will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the CONTRACTOR, and will be considered "Rejected" until resubmitted. The ENGINEER may at his/her option, provide a list or mark the submittal directing the CONTRACTOR to the areas that are incomplete.
- G Repetitive Review
 - 1. Shop drawings and other submittals will be reviewed no more than twice at the OWNER's expense. All subsequent reviews will be performed at times convenient to the ENGINEER and at the CONTRACTOR'S expense, based on the ENGINEER'S then prevailing rates. The CONTRACTOR shall reimburse the OWNER for all such fees invoiced to the OWNER. Submittals are required until approved.
 - 2. Any need for more than one resubmission, or any other delay in obtaining ENGINEER'S review of submittals, will not entitle CONTRACTOR to extension of the Contract Time.
- H If the CONTRACTOR considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the CONTRACTOR shall give written notice thereof to the ENGINEER at least seven working days prior to release for manufacture.
- I 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 from the ENGINEER.

1.06 DISTRIBUTION

- A Distribute reviewed shop drawings and copies of reviewed product data and samples, where required, to the job site file and elsewhere as directed by the OWNER or ENGINEER.

1.07 PROFESSIONAL ENGINEER (P.E.) CERTIFICATION FORM

- A If specifically required in other Sections of these Specifications, the CONTRACTOR shall submit a P.E./RLS Certification for each item required, in the form attached to this Section, completely filled in and stamped.

1.08 GENERAL PROCEDURES FOR SUBMITTALS

- A Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections, of the Specifications, so that the installation will not be delayed by processing times including disapproval and re-submittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the CONTRACTOR'S failure to transmit submittals sufficiently in advance of the Work.
- B At the direction of the ENGINEER only, all submittals, responses and correspondence relating to submittals may be transmitted electronically other than samples and in QC Documentation.

P.E./R.L.S. CERTIFICATION FORM

The undersigned hereby certifies that he/she is a Professional Engineer/Registered Land Surveyor registered in the State of North Carolina and that he/she has been employed by

(Name of Contractor)
to design

in accordance with Specification Section _____ for the

(Name of Project)

The undersigned further certifies that he/she has performed the design of the

_____,
that said design is in conformance with all applicable local, state and federal codes, rules, and regulations, and that his/her signature and P.E./R.L.S. stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the

(Insert Name of Owner)

or OWNER'S representative with five working days following written request therefore by the OWNER.

P.E./R.L.S. Name

Signature

Address

Contractor's Name

Signature

Title

Address

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END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Employ competent photographer to take construction record photographs periodically during course of the Work.

1.02 RELATED REQUIREMENTS

- A. Section 01010: Summary of Work.
- B. Section 01720: PROJECT Record Documents.

1.03 PHOTOGRAPHY REQUIRED

- A. Provide photographs of the general construction area prior to starting construction.
- B. Provide photographs taken on cutoff date for each scheduled Application for Payment.
- C. Provide photographs taken at each stage of construction and a minimum:
 - 1. Prior to initiation of construction.
 - 2. Completion of temporary erosion controls.
 - 3. Completion of stripping.
 - 4. Completion of excavations/grading.
 - 5. During installation of stormwater collection and conveyance structures
 - 6. During installation of subbase for paving and concrete
 - 7. During installation of paving and concrete
 - 8. During installation of foundations and all architectural work that will not be visible upon final completion.
 - 9. Upon completion of stabilization
- D. Views and Quantities Required:
 - 1. At each specified time, photograph PROJECT from a minimum of five different locations, as approved and/or requested by the ENGINEER.

2. Digital copies of photographs may be provided by the CONTRACTOR in lieu of paper copies.

1.04 COSTS OF PHOTOGRAPHY

- A. CONTRACTOR to Pay costs for specified photography.

1. Parties requiring additional photography or prints will pay photographer directly.

PART 2: PRODUCTS

2.01 PHOTOGRAPHS

- A. Provide electronic copies of photographs in Joint Photographic Experts Group format (JPEG). Individual JPEG photographs shall be no greater than 5 megabytes. JPEG photographs shall be named using a consistent methodology including:
 1. Date and time of photo.
 2. Description of subject and orientation of view

PART 3: EXECUTION

3.01 TECHNIQUE

- A. Factual presentation.
- B. Correct exposure and focus.
 1. High resolution and sharpness.
 2. Maximum depth-of-field.
 3. Minimum distortion.

3.02 VIEWS REQUIRED

- A. Photograph from locations to adequately illustrate condition of construction and state of progress.
 1. At successive periods of photography, take at least one photograph from the same overall view as previously.
 2. Consult with the ENGINEER at each period of photography for instructions concerning views required.

3.03 ASSEMBLY OF PRINTS

- A. Provide electronic file of photographs

3.04 DELIVERY OF PRINTS

- A. At minimum, deliver prints to the ENGINEER to accompany each Application for Payment.

END OF SECTION

SECTION 01510

TEMPORARY UTILITIES

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED

- A Furnish, install and maintain temporary utilities required for construction and field offices and remove on completion of work.

1.02 RELATED REQUIREMENTS

- A Section 01010: Summary of Work
- B Section 01590: Field Offices

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A Comply with National Electric Code.
- B Comply with Federal, State and local codes and regulations and with utility company requirements.
- C Comply with North Carolina Department of Transportation Regulations.

PART 2: PRODUCTS

2.01 MATERIALS, GENERAL

- A Materials may be new or used but adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

~~2.02 TEMPORARY ELECTRICITY AND LIGHTING~~

- ~~A CONTRACTOR shall be responsible for making all arrangements with the electrical service provider, in coordination with the OWNER, and to provide all necessary electrical hookups for the CONTRACTOR's office trailer, RPR trailer and meeting trailer as needed, and including systems requiring power as detailed on the Plans.~~
- ~~B CONTRACTOR will pay all costs for initiating service, maintenance and service charges for CONTRACTOR's, OWNER's trailer for the RPR and meeting trailer.~~

2.03 TEMPORARY VENTILATION

- A Provide temporary ventilation as required to maintain adequate environmental conditions to facilitate progress of the Work to meet specified OSHA requirements.
- B Provide temporary ventilation, if necessary, to protect materials from damage due to temperature or humidity.

2.04 TEMPORARY TELEPHONE AND INTERNET SERVICES

~~CONTRACTOR will be responsible for providing wireless internet services needed for use during the Project. CONTRACTOR shall pay all costs for installation, maintenance and removal, and services charges for the CONTRACTOR's field office, RPR's field office and meeting trailer wireless service.~~

2.05 TEMPORARY WATER

- A CONTRACTOR will be responsible for providing water service necessary for construction and construction field office trailers.
- B Make all necessary arrangements for obtaining water for construction purposes as approved by the OWNER.

2.06 TEMPORARY SANITARY FACILITIES

- A Provide sanitary facilities for the PROJECT, in compliance with laws and regulations. This includes the OWNER's RPR trailer and temporary units in the field.
- B Service, clean and maintain facilities and enclosures.
- C Sanitary facilities shall be provided in suitable quality and quantity, available for use by all personnel involved in the Project.

2.07 TEMPORARY PUMPS

Provide temporary pumps for removal of water from the excavation when required by the Work to maintain proper conditions for construction.

PART 3: EXECUTION

3.01 GENERAL

- A Maintain and operate systems to assure continuous service.
- B Modify and extend systems as work progress requires.

3.02 REMOVAL

- A. Completely remove temporary materials and equipment when their use is no longer required.
- B. Clean and repair damage caused by temporary installations or use of temporary facilities.
- C. Restore permanent facilities used for temporary services to the pre-construction specified condition.

END OF SECTION

SECTION 01590

FIELD OFFICES

PART 1 – GENERAL

1.01 REQUIREMENTS

- A. The CONTRACTOR shall may furnish, install and maintain a physical building and furnishings for use as a temporary field office during the Project at a location near the work as approved by the OWNER.
- B. Mobile trailers are not to be used for living quarters.
- C. Provide the ENGINEER with a copy of all applicable permits associated with location and installation of Temporary Field Offices.
- D. Submit to the ENGINEER for review and approval, a shop drawing of the proposed field offices and location; include dimensions, furnishing list, service providers, permitting requirements, and schedule for installation and operation.
- ~~E. CONTRACTOR shall furnish, install and maintain a physical building and furnishings for use as a temporary field office for the purpose of holding project meetings during the Project at a location in close proximity to the work as approved by the OWNER.~~
- ~~F. The CONTRACTOR shall furnish, install and maintain a field office trailer and furnishings for use as a temporary field office for the OWNER'S RPR during the Project at a location near the work as approved by the OWNER.~~

1.02 MINIMUM REQUIREMENTS FOR FACILITIES

- A. Construction:
 - 1. Consult and comply with all state and local ordinances and regulations
 - 2. Structurally sound, weather-tight, with floors raised above ground.
 - 3. At CONTRACTOR's option, portable or mobile buildings may be used. Mobile trailers, when used, shall be modified for office use.
 - 4. Of sufficient size to provide meeting area/room for Project Meetings with a full functioning bathroom with running water and sanitary conveniences.

5. Area for parking, sufficient in size to facilitate vehicle parking during project meetings and maintained for use in all-weather conditions

B. Furnishings:

1. Conference tables, appropriate number of folding chairs.
2. One Whiteboard, minimum 36 inches x 24 inches with color markers and eraser.
3. Furnish washroom with working flush toilet, wash basin, medicine cabinet, toilet tissue holder, and paper towel holder.

C. Services:

1. The CONTRACTOR shall make all provisions and pay all installations and service costs for the CONTRACTOR'S Field Office and RPR's field office, providing at minimum: running water, sanitary facilities and services, ~~telephone service, internet,~~ power service, and exterior lights at the project site.

1.03 USE OF PERMANENT FACILITIES

- A. Permanent facilities shall not be used for field offices or for storage.

PART 2 – PRODUCTS

2.01 MATERIALS, EQUIPMENT, FURNISHINGS

- A. May be new or used, but must be serviceable, adequate for required purpose, and must not violate applicable codes or regulations.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Fill and grade sites for temporary structures to provide surface drainage.
- B. Consult and comply with all state and local ordinances and regulations

3.02 INSTALLATION

- A. Locate construction office facilities at the location acceptable to the OWNER within close proximity to the project area.
- B. Construct temporary field offices on proper foundations in accordance with any applicable state and local ordinances and regulations, and at minimum:
1. Secure portable or mobile buildings.

2. Provide tie-downs in accordance with local and State regulations

C. Provide connections for utility services.

D. Have office equipped and ready for use 15 days before work begins at the site.

3.03 MAINTENANCE AND CLEANING

A. Maintain office(s) in first class condition for the duration of the project; furnish, replace and replenish light bulbs, toilet paper, paper towels, soap and other items required to maintain the office in a clean condition.

B. Wash floor and clean washroom fixtures at least once each week. Wash windows when needed or when requested by OWNER. Sweep floor and dust furnishings daily.

3.04 REMOVAL

A. Remove field offices, contents, foundation and debris, grade site to required elevations and clean the areas within 15 days after Final Completion.

B. Perform any and all necessary grading and stabilization (seeding and mulching) activities to return the site to a pre-construction condition, at minimum.

END OF SECTION

SECTION 01600

MATERIAL AND EQUIPMENT

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED

A Material and equipment incorporated into the Work:

1. Conform to applicable specifications and standards.
2. Comply with size, make, type and quality specified, or as specifically approved in writing by the ENGINEER.
3. Manufactured and Fabricated Products
 - a. Design, fabricate and assemble in accord with the best engineering and shop practices.
 - b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
 - c. Two or more items of the same kind shall be identical, by the same manufacturer.
 - d. Products shall be suitable for service conditions.
 - e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.
5. Maintain a record and log of Material Safety Data Sheets (MSDS) for all materials on-site; provide the OWNER a copy of the MSDS log or individual MSDS sheets as requested.

1.02 RELATED REQUIREMENTS

A General Conditions

B Supplementary Conditions

C Section 01010: Summary of Work

D Section 01030: Special Project Procedures

- E Section 01340: Shop Drawings, Product Data, Working Drawings, and Samples
- F Section 01630: Substitutions and Product Options
- G Section 01740: Warranties and Bonds

1.03 APPROVAL OF MATERIALS

- A Only new materials and equipment shall be incorporated in the work. All materials and equipment furnished by the CONTRACTOR shall be subject to the inspection and approval of the Engineer. No material shall be incorporated into the work without prior approval of the Engineer.
- B The CONTRACTOR shall submit data and samples sufficiently early to permit consideration and approval before materials are necessary for incorporation in the work. Any delay of approval resulting from the CONTRACTOR'S failure to submit samples or data promptly shall not be used as a basis of claim against the OWNER or the ENGINEER.
- C In order to demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes, and surfaces, the CONTRACTOR shall provide such samples of workmanship or finish as may be required.
- D The materials and equipment used on the work shall correspond to the approved samples or other data.

1.04 MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

- A When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including five copies to the ENGINEER.
 - 1. Maintain one set of complete instructions at the job site during installation and until completion.
- B Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
 - 1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with ENGINEER for further instructions.
 - 2. Do not proceed with work without clear instructions.

- C Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.05 TRANSPORTATION AND HANDLING

- A Arrange deliveries of Products in accord with construction schedules, coordinate to avoid conflict with work and conditions at the site.
 - 1. Deliver Products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
 - 2. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that Products are properly protected and undamaged.
- B Provide equipment and personnel to handle Products by methods to prevent soiling or damage to Products or packaging.

1.06 STORAGE AND PROTECTION

- A The CONTRACTOR shall furnish a covered, weather-protected storage structure providing a clean, dry, non-corrosive environment for all mechanical equipment, valves, and special equipment and materials to be incorporated into this project. Storage of materials shall be in strict accordance with the "instructions for storage" of each supplier and manufacturer. The CONTRACTOR shall furnish a copy of the manufacturer's instructions for storage to the ENGINEER prior to storage of all equipment and materials. Corroded, damaged or deteriorated equipment and parts shall be replaced before acceptance of the project. Equipment and materials not properly stored will not be included in a payment estimate.
- B Store Products in accordance with manufacturer's instructions, with seals and labels intact and legible.
 - 1. Store products subject to damage by the elements in weather-tight enclosures.
 - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
 - 3. Store fabricated products above the ground, on blocking or skids prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.
 - 4. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

- C All materials and equipment to be incorporated in the work shall be handled and stored by the CONTRACTOR before, during, and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or equipment.
- D Cement, sand and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking, and spalling to a minimum.
- E All materials which, in the opinion of the ENGINEER, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the work, and the CONTRACTOR shall receive no compensation for the damaged material or its removal.
- F Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored Products to assure that Products are maintained under specified conditions, and free from damage or deterioration.
- G Protection After Installation
 - 1. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove covering when no longer needed.
- H The CONTRACTOR shall be responsible for all material, equipment, and supplies sold and delivered to the OWNER under this Contract until final inspection of the work and acceptance thereof by the OWNER. In the event any such material, equipment, and supplies are lost, stolen, damaged, or destroyed prior to final inspection and acceptance, the CONTRACTOR shall replace same without additional cost to the OWNER.
- I Should the CONTRACTOR fail to take proper action on storage and handling of equipment supplied under this Contract within seven days after written notice to do so has been given, the OWNER retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from any amounts due and payable to the CONTRACTOR. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering and any other costs associated with making the necessary corrections.

1.07 SPECIAL TOOLS

- A Manufacturers of equipment and machinery shall furnish any special tools required for normal adjustment, operations and maintenance, together with instructions for their use. The CONTRACTOR shall preserve and deliver to the OWNER these tools and instructions in good order upon receipt but no later than ten (10) days prior to equipment start-up.

1.08 STORAGE AND HANDLING OF EQUIPMENT ON SITE

A Because of the long period allowed for construction, special attention shall be given to the storage and handling of equipment on site. As a minimum, the procedure outlined below shall be followed.

1. Equipment shall not be shipped until approved by the ENGINEER. The intent of this requirement is to reduce on-site storage time prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the ENGINEER. Operation and maintenance data as described in Section 01730 shall be submitted to the ENGINEER for review prior to shipment of equipment.
2. All equipment having moving parts such as gears, electric motors, etc. and/or instruments shall be stored in a temperature and humidity controlled building approved by the Engineer, until such time as the equipment is to be installed.
3. All equipment shall be stored fully lubricated with oil, grease, etc. unless otherwise instructed by the manufacturer.
4. A copy of the manufacturer's storage instructions shall be given to the ENGINEER and shall be carefully studied by the CONTRACTOR and reviewed with the ENGINEER by him. These instructions shall be carefully followed and a written record of this kept by the CONTRACTOR.
5. Moving parts shall be rotated a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding". Upon installation of the equipment, the CONTRACTOR shall start the equipment, at least half load, once weekly for an adequate period of time to insure that the equipment does not deteriorate from lack of use.
6. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance.
7. Prior to acceptance of the equipment, the CONTRACTOR shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guarantee the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the CONTRACTOR's expense.

1.09 WARRANTY

- A For all major pieces of equipment, submit a warranty from the equipment manufacturer as specified in Section 01740 or as described in individual specification sections, respectively.

1.10 SPARE PARTS

- A The CONTRACTOR shall collect and store all spare parts as required by the manufacturer in accordance with paragraph 1.08 of this Section. In addition, the CONTRACTOR shall furnish to the ENGINEER an inventory listing all spare parts, the equipment they are associated with, the name and address of the supplier.
- B All spare parts shall be the products of the original equipment manufacturer.

1.11 GREASE, OIL, AND FUEL

- A All grease, oil, and fuel required for testing of equipment shall be furnished with the respective equipment.
- B Not Used

PART 2: PRODUCTS (Not Used)

PART 3: EXECUTION (Not Used)

END OF SECTION

SECTION 01630

SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Furnish and install Products specified, under options and conditions for substitutions stated in this Section.
- B. Whenever a product, material or item of equipment is specified or described by using the name of a proprietary product or the name of a particular manufacturer or vendor, followed by the phrase "or equal," the specific item mentioned shall be the basis upon which bids are to be prepared, and shall be understood as establishing the type, function, dimension, appearance and quality desired. Other manufacturer's or vendor's products not named will be considered as substitutions, provided the required information is submitted in the manner set forth in this section and provided the substitution will not require substantial revision to the Contract Documents.

1.02 RELATED REQUIREMENTS

- A. Instruction to Bidders.
- B. Bid Form.
- C. General Conditions.
- E. Supplementary Conditions.
- F. Section 01036: Change Order Procedures.
- G. Section 01600: Material and Equipment.

1.03 SUBMITTALS

- A. Bidders shall submit their list of proposed substitutions and the proposed monetary changes associated therewith to the OWNER on the standard form (Section 00460) provided together with their bids.

1.04 CONTRACTOR'S OPTIONS

- A. For products specified only by reference standard, select product meeting that standard, by any manufacturer.
- B. For products specified by naming several products or manufacturers, select any one of products and manufacturers named which complies with Specifications.
- C. For products specified by naming one or more products or manufacturers and stating "or equal," submit a request as for substitutions, for any product or manufacturer which is not specifically named.
- D. For products specified by naming only one product and manufacturer, there is no option and no substitution will be allowed.

1.05 SUBSTITUTIONS

- A. In order for substitutions to be considered, the CONTRACTOR shall submit, within 30 days of issuance of Notice of Award, complete data as set forth herein to permit complete analysis of all proposed substitutions noted on his/her substitutions list. No substitution shall be considered unless the CONTRACTOR provides the required data in accordance with the requirements of this Section within the 30-day period.
- B. Submit separate request for each substitution. Support each request with:
 - 1. Complete data substantiating compliance of proposed substitution with requirements stated in Contract Documents:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature; identify:
 - i. Product description.
 - ii. Reference standards.
 - iii. Performance and test data.
 - iv. Operation and maintenance data.
 - c. Samples, as applicable.
 - d. Name and address and contact with phone number of similar projects on which product has been used and date of each installation.
 - 6. Itemized comparison of the proposed substitution with product specified; list significant variations. Substitution shall not change design intent and shall perform equal to that specified.
 - 7. Data relating to impact on construction schedule occasioned by the proposed substitution.
 - 8. Any effect of substitution on separate contracts.
 - 9. List of changes required in other work or products.
 - 10. Accurate cost data comparing proposed substitution with product specified.
 - a. Amount of any net change to Contract Sum.
 - 11. Designation of required license fees or royalties.
 - 12. Designation of availability of maintenance services, sources of replacement materials.
- C. Substitutions will not be considered for acceptance when:
 - 1. They are indicated or implied on shop drawings or product data submittals without a formal request from CONTRACTORS.

2. They are requested directly by a subcontractor or supplier.
 3. Acceptance will require substantial revision of Contract Documents.
- D. Requests for substitutions submitted after Notice of Award will not be considered unless evidence is submitted to the Engineer that all of the following circumstances exist:
1. The specified product is unavailable for reasons beyond the control of the CONTRACTOR. Such reasons shall consist of strikes, bankruptcy, discontinuance of manufacturer, or acts of God.
 2. The CONTRACTOR placed, or attempted to place, orders for the specified products within ten days after Notice of Award.
 3. Request for substitution is made in writing to the ENGINEER within ten days of the date on which the CONTRACTOR ascertains that he/she cannot obtain the item specified.
 4. Complete data as set forth herein to permit complete analysis of the proposed substitution is submitted with the request.
- E. The ENGINEER'S decision regarding evaluation of substitutions shall be considered final and binding. Requests for time extensions and additional costs based on submission of, acceptance of, or rejection of substitutions will not be allowed. All approved substitutions will be incorporated into the Agreement by Change Order.

1.06 CONTRACTOR'S REPRESENTATION

- A. In making formal request for substitution, CONTRACTOR represents that:
1. He has investigated proposed product and has determined that it is equal to or superior in all respects to that specified.
 2. He will provide same warranties or bonds for substitution as for product specified.
 3. He will coordinate installation of accepted substitution into the Work and will make such changes as may be required for the Work to be complete in all respects.
 4. He waives claims for additional costs caused by substitution which may subsequently become apparent.
 5. Cost data is complete and includes related costs under his/her Contract, but not:
 - a. Costs under separate contracts.
 - b. ENGINEER'S costs for redesign or revision of Contract Documents.

1.07 ENGINEER DUTIES

- A. Review CONTRACTOR'S requests for substitutions with reasonable promptness.

- B. Notify CONTRACTOR, in writing, of decision to accept or reject requested substitution.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the Work.

1.02 RELATED REQUIREMENTS

- A. General Conditions.
- B. Supplementary Conditions.
- C. Section 01720: Project Record Documents.
- D. Section 01740: Warranties and Bonds.
- E. The respective sections of Specifications: Closeout Submittals Required of Trades, Vendors, Suppliers, and Manufacturers.

1.03 FINAL INSPECTION

- A. When CONTRACTOR considers the Work is complete, he shall submit written certification that:
 - 1. Contract Documents have been reviewed.
 - 2. Work has been inspected for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. Equipment and systems have been tested in the presence of the OWNER'S representative and are operational.
 - 5. Work is completed and ready for final inspection.
- B. The ENGINEER will perform an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should the ENGINEER consider that the Work is incomplete or defective:

1. The ENGINEER will promptly notify the CONTRACTOR in writing, listing the incomplete or defective work.
 2. CONTRACTOR shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the ENGINEER that the Work is complete.
 3. The ENGINEER will re-inspect the Work.
- D. When the ENGINEER finds that the Work is acceptable under the Contract Documents, he shall request the CONTRACTOR to make closeout submittals.

1.04 REINSPECTION FEES

- A. Should the ENGINEER perform re-inspections due to failure of the Work to comply with the claims of status of completion made by the CONTRACTOR:
1. OWNER will compensate the ENGINEER for such additional services.
 2. OWNER will deduct the amount of such compensation from the final payment to the CONTRACTOR.

1.05 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

- A. Evidence of compliance with requirements of governing authorities.
- B. Project Record Documents: To requirements of Section 01720.
- C. Warranties and Bonds: To requirements of Section 01740.
- D. Evidence of Payment and Release of Liens: To requirements of General and Supplementary Conditions.

1.06 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to the ENGINEER.
- B. Statement shall reflect all adjustments to the Contract Sum.
 1. The original Contract Sum.
 2. Additions and deductions resulting from:
 - a. Previous Change Orders.
 - b. Allowances.

- c. Unit Prices.
- d. Deductions for uncorrected Work.
- e. Deductions for liquidated damages.
- f. Deductions for re-inspection payments.
- g. Other adjustments.
- 3. Total Contract Sum, as adjusted.
- 4. Previous payments.
- 5. Sum remaining due.

- C. ENGINEER will prepare a final Change Order, reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders.

1.07 FINAL APPLICATION FOR PAYMENT

- A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the General Conditions of the Contract.

PART 2: PRODUCTS (Not Used)

PART 3: EXECUTION (Not Used)

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED

- A Maintain at the site for the OWNER one record copy of:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other Modifications to the Contract.
 - 5. ENGINEER'S Field Orders or written instructions.
 - 6. Approved Shop Drawings, Working Drawings and Samples.
 - 7. Field Test records.
 - 8. Construction photographs.
 - 9. All other construction related permits.

1.02 RELATED REQUIREMENTS

- A Section 01050: Field Engineering.
- B Section 01200: Project Meetings.
- C Section 01340: Shop Drawings, Product Data, Working Drawings, and Samples.
- D Section 01380: Construction Photographs.

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A Store documents and samples in CONTRACTOR'S field office apart from documents used for construction.
 - 1. Provide files and racks for storage of documents.
 - 2. Provide locked cabinet or secure storage space for storage of samples.
- B File documents and samples in accordance with CSI format.

- C Maintain documents in a clean, dry, legible, condition and in good order. Do not use record documents for construction purposes.
- D Make documents and samples available at all times for inspection by the ENGINEER.
- E As a prerequisite for monthly progress payments, the CONTRACTOR is to exhibit the currently updated "Project Record Documents" and survey data in accordance with Section 01050 for review by the ENGINEER and OWNER.

1.04 MARKING DEVICES

- A Provide felt tip marking pens for recording information in the color code designated by the ENGINEER.

1.05 RECORDING

- A Label each document "PROJECT RECORD" in neat large printed letters.
- B Record information concurrently with construction progress.
 - 1. Do not conceal any work until required information is recorded.
- C Drawings: Legibly mark to record actual construction:
 - 1. Depths of various elements of foundation in relation to grade elevation.
 - 2. All underground piping with elevations and dimensions. Changes to piping location. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements. Actual installed pipe material, class, etc.
 - 3. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
 - 4. Field changes of dimension and detail.
 - 5. Changes made by Field Order or by Change Order.
 - 6. Details not on original contract drawings.
 - 7. Equipment and piping relocations.
 - 8. Major architectural and structural changes including relocation of doors, windows, etc.
 - 9. Architectural schedule changes according to CONTRACTOR'S records and shop drawings.

D Specifications and Addenda; legibly mark each Section to record:

1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
2. Changes made by Field Order or by Change Order.

E Shop Drawings (after final review and approval):

1. One set of record drawings for each process equipment, piping, electrical system and instrumentation system.

1.06 SUBMITTAL

A At Contract close-out, deliver Record Documents to the ENGINEER for the OWNER.

B Accompany submittal with transmittal letter in duplicate, containing:

1. Date.
2. PROJECT title and number.
3. CONTRACTOR'S name and address.
4. Title and number of each Record Document.
5. Signature of CONTRACTOR or his authorized representative.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION

SECTION 01740
WARRANTIES AND BONDS

PART 1: GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers standard warranties on products and special warranties.

1.02 RELATED WORK

- A. Instructions to Bidders.
- B. General Conditions.
- C. Supplementary Conditions.
- D. Section 01030: Special Project Procedures.
- E. Section 01700: Contract Closeout.
- F. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Division 2 through 16.
- G. Certifications and other commitments and agreements for continuing services to OWNER are specified elsewhere in the Contract Documents.

1.03 SUBMITTALS

- A. Submit written warranties to the OWNER prior to the date fixed by the ENGINEER for Substantial Completion. If the Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the OWNER.
- B. When a designated portion of the Work is completed and occupied or used by the OWNER, by separate agreement with the CONTRACTOR during the construction period, submit properly executed warranties to the OWNER within fifteen days of completion of that designated portion of the Work.
- C. When a special warranty is required to be executed by the CONTRACTOR, or the CONTRACTOR and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate

terms and identification, ready for execution by the required parties. Submit a draft to the OWNER for approval prior to final execution.

- D. Refer to individual Sections of Divisions 2 through 16 for specific content requirements, and particular requirements for submittal of special warranties.

1.04 WARRANTY REQUIREMENT

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The CONTRACTOR is responsible for the cost of replacing or rebuilding defective Work regardless of whether the OWNER has benefited from use of the Work through a portion of its anticipated useful service life.
- D. OWNER's Recourse: Written warranties made to the OWNER are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the OWNER can enforce such other duties, obligations, rights, or remedies.
- E. Rejection of Warranties: The OWNER reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the contract Documents.
- F. The OWNER reserves the right to refuse to accept Work for the PROJECT where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.
- G. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the CONTRACTOR of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the CONTRACTOR.

- H. Separate Prime Contracts: Each Prime CONTRACTOR is responsible for warranties related to its own Contract.

1.05 DEFINITIONS

- A. Standard Product Warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the OWNER.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the OWNER.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION

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SECTION 02100
SITE PREPARATION

PART 1: GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, and equipment required and perform all clearing and grubbing complete as shown on the Drawings and as specified herein. Site Preparation includes but is not limited to protection of trees outside the working area or as designated, removal of trees and vegetation within the site clearing limits, grubbing within the site clearing limits, stripping topsoil and removal of debris on the site.
- B. Obtain all permits required for site preparation work prior to proceeding with the work, including clearing and grubbing.

1.02 RELATED WORK

- A. Section 02200: Excavation Backfill, and Compaction

1.03 SUBMITTALS

- A. CONTRACTOR shall supply grid elevations (pre-work survey) immediately after Vegetation Removal by a Registered Land Survey in accordance with Section 01050.

PART 2: PRODUCTS - Not Used

PART 3: EXECUTION

3.01 SURVEY

- A. The CONTRACTOR shall locate and mark the limits of the clearing and grubbing and project area.

3.02 CLEARING

- A. Complete clearing of only those areas required to install the erosion control measures as shown on the plans prior to initiating additional clearing operations.
- B. Cut and remove trees, stumps, brush, shrubs, roots, grass, weeds, rubbish, and any other objectionable material resting on or protruding through the surface of the ground.
- C. Trees and other vegetation designated on the Drawings or directed by the ENGINEER to remain shall be preserved and protected as specified. Cut and remove timber, trees, stumps, brush, shrubs, roots, grass, weeds, rubbish, and any other objectionable material resting on or protruding through the surface of the ground.

3.03 GRUBBING

- A. Grubb only those areas required to install the erosion control measures as shown on the plans prior to initiating additional clearing operations.
- B. Grub and remove all stumps, roots in excess of 1-1/2 inches in diameter, matted roots, brush, timber, logs, concrete rubble, and all other debris encountered.
- C. All grubbing holes and depressions excavated below the original ground surface shall be refilled with common fill and compacted to a density conforming to the surrounding ground surface.

3.04 STRIPPING

- A. Remove existing soil material in areas as shown on the plans; stockpile soils at the ENGINEER approved location only.
- B. CONTRACTOR shall make every effort to segregate topsoils from large vegetative debris. Soil materials may be used in construction if requested and accepted by the ENGINEER.

3.05 DISPOSAL

- A. The CONTRACTOR shall haul and stockpile all vegetative debris material from the clearing and grubbing operation at the Owner's designated stockpile area.
- B. On-site disposal of cleared and grubbed materials by burning is allowed if approved by the OWNER and federal, state, and local agencies.

3.06 PROTECTION

- A. Trees and other vegetation designated on the Drawings or directed by the ENGINEER to remain shall be protected from damage by all construction operations by erecting suitable barriers, guards, and enclosures, or by other approved means. Clearing operations shall be conducted in a manner to prevent falling trees from damaging trees and vegetation designated to remain and to the work being constructed and to provide for the safety of employees and others.
- B. Protection shall be maintained until all work in the vicinity of the work being protected has been completed.
- C. Heavy equipment operation or stockpiling of materials shall not be permitted within the branch spread of existing trees.
- D. Any damage to existing tree crowns, trunks, or root systems shall be repaired immediately. Roots exposed and/or damaged during the work shall immediately be cut off cleanly inside the exposed or damaged area. Cut surfaces shall be treated with an acceptable tree wound paint, and topsoil spread over the exposed root area.
- E. When work is completed, all dead and downed trees shall be removed. Live trees shall be trimmed of all dead and diseased limbs and branches. All cuts shall be cleanly made at their juncture with the trunk or preceding branch without injury to the trunk or remaining

branches. Cuts over 1-in in diameter shall be treated with an acceptable tree wound paint.

- F. Construction activities shall be restricted to those areas within the limits of construction designated on the Drawings, within public rights-of-way, and within easements provided by the OWNER. Adjacent properties and improvements thereon, public or private, which become damaged by construction operations shall be promptly restored to their original condition, to the full satisfaction of the property owner.

END OF SECTION

SECTION 02200

EXCAVATION, BACKFILL, AND COMPACTION

PART 1: GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals necessary to perform all excavation, backfill, compaction and grading required to complete the work shown on the Drawings and specified herein. The work shall include, but not necessarily be limited to excavation, backfilling, grading, compaction, disposal of waste and surplus materials, placing crushed stone, construction of berms, and all related work such as sheeting, bracing and de-watering.
- B. All excavation, trenching, and related sheeting, bracing, etc. shall comply with the requirements of OSHA excavation safety standards 29 CFR Part 1926.650 Subpart P and State requirements. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.
- C. Excavated topsoil and excess cut material will be stockpiled in locations approved by the OWNER.
- D. Contractor shall retain the services of a Construction Quality Control (CQC) Engineer to perform observation and testing

1.02 RELATED WORK

- A. Section 01050: Field Engineering
- B. Section 02100: Site Preparation
- C. Section 02276: Erosion and Sedimentation Control

1.03 SUBMITTALS

- A. A signed certification letter, with all necessary permits, that the source is in full compliance with State, County and local laws and regulations for each source.
- B. The CONTRACTOR shall furnish a representative sample weighing approximately 40 pounds of each fill material, stone and crushed stone to the Engineer for approval, at least 15 calendar days prior to the date of anticipated use of such material.
- C. Excavation support designs, if necessary, shall be prepared by a licensed professional engineer, registered in the State of North Carolina, having a

minimum of five years of professional experience in the design and construction of excavation support systems.

- D. De-watering and drainage system designs, if required, shall be prepared by a licensed professional engineer, registered in the State of North Carolina, having a minimum of five years of professional experience in the design and construction of dewatering and drainage systems.

1.04 PROTECTION

A. Sheet piling and Bracing (if required)

1. Furnish, put in place and maintain such sheet piling and bracing as may be required by Federal, State and local safety requirements to support the sides of excavations; to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction; and to protect adjacent structures from undermining or other damage. If the Engineer is of the opinion that at any location sufficient or proper supports have not been provided, he/she may order additional supports put in, and compliance with such order shall not relieve or release the Contractor from his/her responsibility for the sufficiency of such supports. Care shall be taken to prevent voids outside of the sheet piling, but if voids are formed, they shall be immediately filled and rammed. Where soil cannot be properly compacted to fill a void, lean concrete shall be used as backfill. All voids shall be filled to the satisfaction of the Engineer.
2. Construct the sheet piling outside the neat lines of the foundation, unless indicated otherwise, to the extent deemed desirable for the method of operation. Sheet piling shall be plumb and securely braced and tied in position. Sheet piling and bracing shall be adequate to withstand all pressures to which the structure or trench will be subjected. Any movement or bulging which may occur shall be corrected to provide the necessary clearances and dimensions.
3. All sheet piling and bracing shall be carefully removed in such manner as not to endanger the construction or other structures, utilities, or property. All voids left or caused by withdrawal of sheet piling shall be immediately re-filled with sand, which must be approved by the CQA Officer, by ramming with tools especially adapted to that purpose, or otherwise as may be directed.
4. The right of the Engineer to order sheet piling and bracing left in place shall not be construed as creating any obligation on his/her part to issue such orders and his/her failure to exercise his/her right to do so shall not relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise,

growing out of a failure on the part of the Contractor to leave in place sufficient sheeting and bracing to prevent any caving or moving of the ground.

5. No sheeting is to be withdrawn if driven below mid-diameter of any pipe and under no circumstances shall any sheeting be cut off at a level lower than 1-ft above the top of any pipe.

B Drainage and De-watering

1. Dewatering shall be performed as specified during the excavation of organics and unstable soils from the site. Limited dewatering may be required during the excavation and filling of ponds, ditches and where the topsoil layer extends below the water table.
2. At all times during construction provide and maintain proper equipment and facilities to remove all water entering excavations and keep such excavations dry so as to obtain a satisfactory undisturbed subgrade condition until the fills, structures or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water into the excavated areas. Groundwater shall be lowered to at least 1 foot below the bottom of excavations.
3. De-watering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation. Well or sump installations shall be constructed with proper sand filters to prevent drawing of finer grained soil from the surrounding ground.
4. Surface runoff shall be collected, drained to sumps and pumped from the disposal unit to maintain an excavation bottom free from standing water.
5. De-watering of ponds or ditches filled with water shall be performed in such a manner as to control discharge water by use of sediment basins and/or check dams or other erosion control structures approved by NCDENR.
6. Take all additional precautions to prevent uplift of any structure during construction.
7. Drainage shall be disposed of so that flow or seepage back into the excavated area will be prevented.
8. Flotation shall be prevented by maintaining a positive and continuous operation of the dewatering system. The Contractor shall be fully

responsible and liable for all damages which may result from failure of this system.

9. Remove the dewatering equipment after the system is no longer required.
10. Take all necessary precautions to preclude the accidental discharge of fuel, oil, etc in order to prevent adverse effects on groundwater or surface water quality.

C. SLOPE STABILITY

1. The Contractor shall be solely responsible for the stability of roadway embankments, unbalanced fills, stockpiles, and all other construction operations.

1.06 SOIL TESTING

- A. Before the placement of the fill and during such placement, the Engineer may select areas within the limits of the fill for testing. The Contractor shall cooperate fully in obtaining the information desired.

PART 2: PRODUCTS

2.01 MATERIALS

- A. Materials for use as fill shall be as described below. The Contractor shall notify the Engineer of the source of each material. On-site borrow areas may be utilized with prior approval from the Owner. Off-site materials shall be furnished as required from approved off-site sources (see 1.03.A) and hauled to the site. All local, state and federal regulations shall apply. The Contractor shall submit copies of all applicable permits and approval to the Owner prior to commencement of the work.
- B. Backfill shall consist of mineral soil free from organic materials, loam, wood, trash and other objectionable materials which may be compressible or which cannot be properly compacted. Common fill shall not contain stones larger than 4 inches in largest diameter and shall have at least 60 percent passing the No. 4 sieve, a maximum of 60 percent passing No. 200 Sieve, a maximum liquid limit of 60, and a maximum plasticity index of 25. Common Fill shall not contain granite blocks, broken concrete, masonry rubble or other similar materials. It shall have physical properties such that it can be readily spread and compacted during filling. Snow, ice and frozen soil will not be permitted. Common Fill shall be compacted to at least 95% of the standard Proctor (ASTM D698) maximum dry density or as otherwise shown on the drawings.

- C. Select Fill shall be as specified above for Backfill except that the material shall contain no stones larger than two inches in largest dimension, a maximum of 50 percent passing the No. 200 Sieve, a maximum liquid limit of 50 and a maximum plasticity index of 15. Select Fill shall be compacted to 98% of the standard Proctor (ASTM D698) maximum dry density.
- D. The soils shall be wetted or dried as necessary so that the moisture content during compaction is within 3% of the optimum moisture content as determined by ASTM D698.
- E. Highly micaceous and elastic silts shall not be used for Common, Select Fill or Structural Fill.
- F. Crushed Stone
 - 1. All crushed stone shall be silica material that is sound, hard, durable, resistant to weathering, as defined by ASTM D2488 and shall be free of overburden, spoil, shale, limestone and organic material. The stone shall be free of deleterious materials such as flat, elongated, friable, decomposed, or micaceous pieces. Broken pieces of concrete, asphalt, or brick are not acceptable. Crushed stone shall be of the size and type shown on the drawings.
- G. Not used.
- H. Not used.

2.02 CONFORMANCE TESTING

Conformance testing shall be performed by the Quality Control Laboratory on samples from each source of backfill material. Material identified for use as backfill shall be tested at the frequency specified in Table 1 and at every change in the material, identified by the Engineer:

TABLE 1

Test	Method	Frequency
Grain Size	ASTM D422	Every 10,000 cy
Atterberg Limits	ASTM D4318	Every 10,000 cy
Moisture/Density	ASTM D698	Every 20,000 cy
Natural Moisture	ASTM D2216	Every 10,000 cy

Results of the tests will be submitted to the Owner within 24 hours of test completion. The Engineer reserves the right to reject material based on the results of the conformance tests.

PART 3: EXECUTION

3.01 GENERAL EXCAVATION

- A. General Excavation is expected to consist of removing unsuitable soils identified during proofrolling (Section 3.01.E) and as required as part of the work represented on the Drawings (Grading Plan). The bottom of the excavations shall be rendered firm and dry and in all respects acceptable to the Engineer.
- B. Excavation and de-watering shall be accomplished by methods that preserve the undisturbed state of subgrade soils. Soils which become soft, loose, "quick", or otherwise unsatisfactory for support of structures, earthen or man-made, as a result of inadequate excavation, de-watering, proofrolling, or other construction methods shall be removed and replaced as required by the Engineer at the Contractor's expense.
- C. De-watering shall lower the groundwater to at least 1-foot below excavation subgrade and prevent "boiling" condition or detrimental underseepage at the base of the excavation as specified herein.
- D. Excavation equipment shall be satisfactory for carrying out the work in accordance with the Specifications.
- E. Proofroll exposed subgrades after stripping topsoil and organics with a minimum of two complete passes of a rubber tired heavy vehicle as approved by the Engineer. All proofrolling shall be conducted in the presence of the Engineer or designated representative. The Engineer may require excavation and replacement or other remediation as necessary to provide a firm, stable subgrade in areas that appear to be rutting, pumping, or otherwise appear unstable while proofrolling. The repair procedure shall be determined by the Engineer.

3.02 TRENCH EXCAVATION

- A. Excavation for all trenches required for the installation of pipes shall be made to the depths indicated on the Drawings and in such a manner and to such widths as will give suitable room for laying the pipe within the trenches, for bracing and supporting the trench sides and for pumping and drainage facilities. Contractor shall render the bottom of the excavations firm and stable and in all respects acceptable to the Engineer.
- B. The trench may be excavated by machinery to, or just below the designated subgrade provided that the material remaining in the bottom of the trench is not disturbed.

- C. Where pipe is to be installed in fill, fill shall be placed and compacted to at least 2 ft. above the top of the pipe (rough grade elevation) and then trenches re-excavated for pipe installation.

3.03 MISCELLANEOUS EXCAVATION

- A. The Contractor shall perform all excavations necessary for the placing of seeding and plants, for constructing roadways, and any other miscellaneous earth excavation required under this Contract.

3.04 GENERAL BACKFILL

- A. Materials placed in fill areas shall be placed to the lines and grades shown on the Drawings. Unless otherwise specified, Common Fill shall be used for backfill.
- B. Fill shall be placed in accordance with the Contract Document.
- C. Material conforming to the requirements of Backfill shall be placed in layers having a maximum compacted thickness of 8-inches measured before compaction and shall be compacted to at least 95 percent of its maximum density as determined by ASTM D698. The minimum frequency of testing shall be 1 test per lift per 10,000 square feet or as directed by the Engineer in irregular-shaped fill areas. CQA personnel shall perform testing of Backfill.
- D. The surfaces of filled areas shall be graded to smooth true lines, conforming to grades indicated on the grading plan and no soft spots or un-compacted areas will be allowed in the work.
- E. No compacting shall be done when the material is covered with frost or is frozen or is too wet either from rain or from excess application of water. At such times, work shall be suspended until the previously placed and new materials have thawed and/or dried sufficiently to permit proper compaction.
- F. All backfill shall be placed at a moisture content within 3% of Standard Proctor (ASTM D698) optimum moisture content.

3.05 TRENCH BACKFILL

- A. Backfilling over pipes shall begin as soon as practicable after the pipe has been laid, jointed, and inspected. All backfilling shall be performed expeditiously.
 - 1. Backfill shall be placed around the lower half of the pipe and thoroughly rodded and tamped to fill all voids and provide uniform support of the pipe in the bedding zone. Backfill shall be thoroughly compacted by

machine tamping in 6-inch layers as required to provide 98% of the Standard Proctor maximum dry density per ASTM D-698.

2. Backfill shall be placed around the upper half of the pipe and to a minimum depth of 12-inches over the top of the pipe. Backfill shall be thoroughly compacted by machine tamping in 6-inch layers as required to provide 98% of the Standard Proctor maximum dry density per ASTM D-698.
3. The remainder of the trench shall be backfilled with Backfill in loose layers not to exceed 8-inches and thoroughly compacted with mechanical tampers as required to obtain the specified 95% compaction.
4. Backfilling under haunches shall be performed manually by tamping rods or similar hand equipment to eliminate voids underneath sides of the pipe or haunch.
5. The minimum frequency for density tests shall be 1 test per lift per 50 feet of trench for all material types or as specified by the Engineer.

3.06 ROAD SUBGRADE

- A. The road subgrade for bituminous, concrete, and crushed stone pavement areas in fill sections shall consist of a two-foot thick layer of Backfill compacted to a minimum 98% of the Standard Proctor maximum dry density per ASTM D-698. CQA personnel shall perform testing of Road Subgrade Backfill.
- B. The road subgrade for bituminous, concrete, and crushed stone pavement areas in cut sections shall consist of firm natural soils as approved by the Engineer.
- C. Road subgrades shall be proofrolled as described in Section 02200, 3.01 E.

3.07 HANDLING OF SURPLUS MATERIAL

- A. Excavated materials shall not be removed from the site except as specified by the Owner. Materials shall be neatly stockpiled on-site at locations directed by the Owner. Excess materials shall be compacted and stockpiled in accordance with the contractor's fill placement plan. Contractor shall provide erosion and sedimentation control measures as shown on the drawings and specified in the Contract Documents.

3.08 GRADING

- A. Grading in preparation for placing soil liner material shall be performed to the elevations shown and otherwise as directed by the Engineer. During the

process of grading, the subgrade shall be maintained in such condition that it will be well drained at all times. When required, temporary drains and drainage ditches shall be installed to intercept or divert surface water that may affect the performance or condition of the work.

- B. If at the time of grading it is not possible to place material in its final location, it shall be stockpiled in approved areas. Stockpiled material shall be placed, compacted and smooth-rolled at the end of each day to deter water infiltration. No extra payment will be made for the stockpiling or double handling of excavated material.
- C. Engineer reserves the right to make minor adjustments in lines or grades if deemed necessary as the work progresses, in order to obtain satisfactory construction.
- D. Stones or rock fragments larger than 3-inches in their greatest dimensions will not be permitted in the top 6-inches of the finished subgrade of all fills or embankments.

3.09 INSPECTION/TESTING

- A. Construction observation, inspection and testing – Contractor shall employ a CQC Engineer and Quality Control Laboratory to perform soils observation and confirmation testing services for quality control of the fill material.
- B. Initial Observation – Compacted fill and backfill operations shall be performed after the surface has been properly prepared and has been observed and approved by CQC Engineer. No Compacted fill shall be placed unless the CQC Engineer approves the operation. Any fills placed without CQC Engineer observation and prior approval shall be removed in a manner to avoid damage or disturbance to the existing approved work, and the excavation shall be filled as specified herein.
- C. Field Control – The minimum testing frequencies for field tests to be performed by the Quality Control personnel are identified in Sections 3.04, 3.05, and 3.06. The intent of the field tests is to insure that the specified density and moisture contents are being obtained.

One-point compaction tests shall be performed to interpolate between laboratory compaction (ASTM D 698) curves for at least every 5 in-place density tests or per change in material. The one-point compaction tests shall be performed on either the field density test sample or soil from a location immediately adjacent to the field density test sample, using the ASTM D 698 procedure. The results of the one-point tests shall then be compared with the full compaction curves of similar soils to estimate the maximum dry density applicable to the field density test sample.

Note: A nuclear density test gauge can be used to provide the required density testing. However, the in-situ density shall be determined using the sand cone method (ASTM D 1556) and/or the drive cylinder method (ASTM D 2937) of a minimum of one test per ten nuclear density tests or one per day, whichever is greater. The sand cone and/or drive cylinder test should be performed at the same location as a nuclear density test. The sand cone and/or drive cylinder tests shall be continued until a correlation between the density and moisture contents obtained by the nuclear density gauge and the sand cone and/or drive cylinder tests has been demonstrated.

END OF SECTION

SECTION 02272

FILTER FABRIC

PART 1: GENERAL

1.01 SCOPE OF WORK

- A Furnish all labor, materials, equipment and incidentals required to install filter fabric complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

- A Section 02200: Excavation, Backfill and Compaction
- B Section 02276: Erosion and Sedimentation Control
- C Section 02505: Crushed Stone Paving

1.03 SUBMITTALS

- A At least 30 calendar days prior to filter fabric installation, submit the following information in accordance with Section 01340:
 - 1. Manufacturer's background information.
 - 2. List of material properties and samples of filter fabric with attached certified test results.
 - 3. Manufacturer's quality control program and manual including description of laboratory facilities.
 - 4. A list of ten completed facilities where the filter fabric is used including:
 - a. Name and purpose of facility, its location and date of installation.
 - b. Name of Owner, project manager, design engineer and installer.
 - c. Fabric thickness and surface area.
 - d. Specific application and information on performance of the facility.
 - 5. Shop Drawings, including:

- a. Proposed panel layout showing the installation layout identifying field seams as well as any variance or additional details which deviate from the Drawings, if applicable.
 - b. Details of overlap, seaming, anchoring, connections and other construction details.
6. Installation schedule and locations of areas designated for installation
 7. A manual that specifically defines the quality control and quality assurance program during installation including manufacturer's installation guidelines.
 8. Copy of quality control certificates in conformance with Paragraph 2.02.

1.04 REFERENCE STANDARDS

A American Society for Testing and Materials (ASTM)

1. ASTM D5199 - Standard Test Method for Measuring Thickness of Textile Materials.
2. ASTM D5261 - Standard Test Method for Mass per Unit Area (Weight) of Woven Fabric.
3. ASTM D3786 - Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diaphragm Bursting Strength Tester Method.
4. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
5. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
6. ASTM D4632 - Standard Test Method for Breaking Load and Elongation of Geotextiles (Grab Method).
7. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile.
8. ASTM D4833 - Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products.

- B Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 FABRIC APPLICATIONS

The filter fabric is to be used for placement beneath erosion control stone and structures, beneath crushed stone paving where called for; bonded to both sides of drainage net for geocomposite; and, installed as operational cover over the leachate collection lines as shown on the Drawings. The unit weights of the filter fabric for each use are specified herein.

1.06 DELIVERY, STORAGE AND HANDLING

- A The filter fabric shall be shipped, stored and handled in accordance with manufacturer's recommendations and as specified herein.
- B The fabric shall be stored with a cover so that it is protected from exposure to sunlight and shall be elevated from the ground (a minimum of 3-in) to protect the fabric from stones and other sharp objects and saturation.

1.07 REQUIREMENTS PRIOR TO INSTALLATION

- A For use in erosion control structures, the subgrade shall be inspected and approved by the Engineer prior to installation of the filter fabric. The subgrade shall be smooth, uniform and compacted for the installation of the fabric.

1.08 MATERIAL WARRANTY

- A The manufacturer shall warrant the material, against manufacturing defects and material degradation for a period of five years from the date of installation. The manufacturer shall replace any material which fails within the warranty period. The manufacturer shall furnish a written warranty covering the requirements of this Paragraph.

1.09 GUARANTEE

- A The Contractor shall guarantee the filter fabric against defects in installation and workmanship for the period of two years commencing with the date of Final Acceptance. The guarantee shall include the services of qualified service technicians and all materials required for the repairs at no expense to the Owner.

PART 2: PRODUCTS

2.01 GENERAL

- A The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration.

2.02 MATERIALS

A Nonwoven Fabric

1. All fabric shall be a nonwoven needle punched polypropylene fabric consisting of filaments formed into a stable network, such as SKAPS GE-160 or equal.
2. A nominal 8 oz/yd² unit weight fabric shall be used as bedding for rip-rap lined stormwater structures, ditches, outlets and operational cover.
3. The fabric shall be non-biodegradable, nonreactive within a pH range of 2 to 13, resistant to ultraviolet light exposure, and resistant to insects and rodents. Test results from any sampled roll in the lot, when tested in accordance with ASTM D4759, shall meet or exceed the values listed in Table 1.

TABLE 1
MINIMUM AVERAGE ROLL VALUES (MARV)
GEOTEXTILE FABRICS

PROPERTIES	TEST METHOD	MARV		
		UNIT	6 OZ.	8 OZ.
Mass per Unit Area	ASTM D5261	oz./yd ²	5.7	7.3
Grab Tensile Strength	ASTM D4632	lbs	150	205
Grab Elongation	ASTM D4632	%	50	50
Trapezoidal Tear	ASTM D4533	lbs	65	95
CBR Puncture	ASTM D6241	lbs	435	600
Water Flow	ASTM D4491	gal/min/ft ²	110	95
Apparent Opening Size	ASTM D4751	US Sieve	70	80

2.03 QUALITY CONTROL DOCUMENTATION

- A Prior to installation, the Contractor shall provide to the Engineer the following information certified by the manufacturer for the delivered fabric.
1. Each roll delivered to the Project site shall have the following identification information:
 - Manufacturer's name
 - Product identification
 - Roll number

- Roll dimensions
- 2. Quality control certificates, signed by the manufacturer's quality assurance manager. Each certificate shall have roll identification number, sampling procedures, testing frequency and test results. At a minimum the following test results shall be provided every 50,000 square feet of manufactured fabric in accordance with test requirements specified in Paragraph 2.02.
 - Mass per Unit Area
 - Grab Tensile Strength
 - Grab Elongation
 - Trapezoidal Tear
 - CBR Puncture
 - Water Flow
 - Apparent Opening Size

PART 3: EXECUTION

3.01 PREPARATION

A General

1. Preparation of the subgrade shall be in accordance with Section 02200, or otherwise depending on the specific application.
2. The subgrade shall be inspected by the CQC Engineer prior to installation of the filter fabric.

3.02 INSTALLATION

A Fabric Placement

1. The subgrade shall be maintained in a smooth, uniform and compacted condition during installation of the filter fabric beneath the erosion control stone.
2. No mechanical equipment shall be driven directly on top of the filter fabric.
3. Granular fill materials shall be installed in accordance with Section 02700.
4. Damage to the filter fabric occurring during the placement of protective cover shall be repaired immediately at no additional expense to the Owner.

B Field Overlap

1. The fabric shall be overlapped according to the manufacturers recommended installation guidelines for a particular application.

3.03 FIELD QUALITY CONTROL

- A Two duplicate documentation files for fabric placement shall be maintained. One shall be maintained by the Contractor and the other by the Engineer. At the end of each work week, the files shall be updated and checked to assure that all copies of pertinent project information are included in each file. The Contractor shall submit daily copies of the documentation to the Engineer.
- B The filter fabric installation and related work shall be inspected by the Engineer. All work in the system therein being inspected shall be complete, clean and ready for use. All work shall meet the requirements of cleanliness and workmanship, as determined by the Engineer.
- C Discrepancies shall be noted and repaired at no additional expense. Final acceptance of the system shall be contingent upon the approval of the Engineer.

END OF SECTION

SECTION 02505

CRUSHED STONE PAVING

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. The CONTRACTOR shall furnish all labor, materials, equipment and incidentals required to construct access and service roads as shown on the Drawings.
- B. The CONTRACTOR shall maintain access and service roads under this Contract during the guarantee period of one year and shall promptly refill and grade areas that have settled or are otherwise unsatisfactory for traffic.

1.02 RELATED WORK NOT INCLUDED

- A. Section 02200: Excavation, Backfill, and Compaction

1.03 REFERENCE SPECIFICATIONS

- A. Except as otherwise specified herein, the Standard Specifications for Highway Construction as issued by the State of North Carolina, Department of Transportation, shall apply to material requirements for access and service road construction.

1.04 SUBMITTALS

- A. The CONTRACTOR shall provide in submittal format for ENGINEER review, the results of recent gradation and modified Proctor moisture-density tests performed by NCDOT or from the Department approved source for which the material is manufactured. If requested, CONTRACTOR shall provide a sample of the proposed material.

PART 2 - PRODUCTS

2.01 SUBGRADE MATERIAL

- A. See Section 02200 – Excavation, Compaction, and Backfill

2.02 CRUSHED STONE

- A. Crushed Stone paving material shall conform to NCDOT standards for Graded Aggregate Base Course.

PART 3 - EXECUTION

3.01 GENERAL

- A. Materials for the perimeter access roads shall be delivered, placed and compacted in accordance with the contract specifications and drawings.
- B. The CONTRACTOR shall perform all general unclassified excavation, rough or overall grading, borrow and fill, to the subgrades of the road, road shoulders and slopes to match the existing grades.
- C. Finished excavation and grading shall be uniformly smooth, well compacted, and free from irregular surface changes. The degree of finish shall be that obtainable from either blade-grader or scraper operations. The finished surface shall not be more than 0.10 ft above or below the new grade.

3.02 INSTALLATION

- A. Prior to placing backfill to create the pavement subgrade in fill areas, or Crushed Stone paving in cut areas, the exposed natural soil subgrade shall be proofrolled in the presence of the ENGINEER and/or the CQC Engineer. Proofrolling shall be performed with at least four complete coverages of the rear wheels of a fully loaded CAT D300D truck or as directed by the ENGINEER.

Soft, wet, organic, or other unsuitable materials or conditions identified during proofrolling shall be undercut by at least 12 inches and backfilled with suitable fill as directed by the ENGINEER at no additional cost the OWNER.
- B. Backfill for road subgrade shall be placed in layers in accordance with Section 02200. CQC shall perform compaction testing of the pavement subgrade fill.
- C. Crushed Stone paving shall be placed over the prepared subgrade (overlain by geotextile or geogrid) where shown on the contract documents. The Crushed Stone shall be spread with track-mounted equipment. Each lift of Crushed Stone shall be compacted to at least 100% of its maximum laboratory density as determined by AASHTO T-180 as modified by NCDOT. CQC shall perform compaction testing of the crushed stone paving. The minimum frequency of testing shall be 1 test per lift per 10,000 square feet or as directed by the ENGINEER.

END OF SECTION

SECTION 02510

PAVING AND SURFACING

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall furnish all labor, equipment and materials and perform all operations in connection with the construction of asphalt concrete pavement, asphalt concrete overlay, reinforced concrete pavement, gravel roads, concrete curb and gutter, repair and reconstruction of existing asphalt concrete pavement, repair of existing gravel roads, and pavement markings complete as specified herein and as detailed on the Drawings.
- B. All new roads including the replacement of portions of the existing roads shall be to the limits, grades, thicknesses and types as shown on the Drawings. Patches for pipe crossings and areas damaged during the construction work shall be asphalt and/or gravel, depending upon the material encountered, unless otherwise indicated.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Requirements of related work are included in Division 1, Division 2 and Division 3 of these Specifications.

1.03 RELATED SECTIONS

- A. Section 02200 - Earthwork
- B. Section 03300 - Cast-In-Place Concrete

1.04 STANDARD SPECIFICATIONS

- A. Except as otherwise provided in the Specifications or on the plans, all work shall be in accordance with the North Carolina Department of Transportation Standard Specifications for Roads and Structures, latest revision except that any reference to "NCDOT", "Department" or "Unit" shall mean the "Owner". When reference to these Specifications is intended, the description will be NCDOT Section _____ or NCDOT Specifications.
- B. Except with the approval of the Engineer, the placing of concrete or asphalt concrete surface paving shall be subject to the Seasonal and Weather Restrictions set forth in NCDOT Specifications.

PART 2 -- MATERIALS

2.01 SELECT FILL

- A. The Contractor shall place select fill as necessary to complete the embankments, shoulders, subgrade foundation and replacement for removed unsuitable material in accordance with Section 02200, Excavation, Compaction, and Backfill.

2.02 GRAVEL

- A. All work, including materials, associated with gravel shall be in accordance with NCDOT Section 545, Incidental Stone Base, except that Articles 545-6 and 545-7, shall be deleted.

2.03 AGGREGATE STABILIZATION

- A. All work, including materials, associated with Aggregate Stabilization shall be in accordance with NCDOT Section 510, Aggregate Stabilization, except that Article 510-6 shall be deleted.

2.04 AGGREGATE BASE COURSE (ABC)

- A. All work, including materials, associated with Aggregate Base Course shall be in accordance with NCDOT Section 520, Aggregate Base Course, except that Articles 520-7 and 520-11 shall be deleted.

2.05 ASPHALT CONCRETE BINDER COURSE

- A. All work, including materials, associated with asphalt concrete binder course shall be in accordance with Section 640, Asphalt Concrete Binder Course, Types H and HDB, of the NCDOT Standard Specifications, except that Articles 640-5 and 640-6 shall be deleted and Paragraph (B) of Article 640-3 shall be revised by deleting the first paragraph and adding the following, "A job mix formula will be developed by the Contractor for the particular materials the Contractor proposes to use, in accordance with Article 610-3."
- B. The job mix formula shall be delivered to the Engineer at least two (2) weeks prior to beginning paving operations.

2.06 ASPHALT CONCRETE SURFACE COURSE

- A. All work, including materials, associated with asphalt concrete surface course shall be in accordance with Section 645, Asphalt Concrete Surface Course, Types I-1, I-2 and HDS, of the NCDOT Standard Specifications, except that Articles 645-5 and 645-6 shall be deleted and Paragraph (B) of Article 645-3 shall be revised by deleting the first paragraph and adding the following "A job mix formula will be developed by the Contractor for the particular materials the Contractor proposes to use, in accordance with Article 610-3".

- B. The job mix formula shall be delivered to the Engineer at least two (2) weeks prior to beginning paving operations.

2.07 RIGID PORTLAND CEMENT CONCRETE PAVEMENT

- A. All work, including materials associated with rigid concrete pavement shall be in accordance with Section 03301, Concrete and Reinforcing Steel. Placement shall be in accordance with Section 03301, Concrete and Reinforcing Steel and NCDOT Section 700, General Requirements for Portland Cement Concrete Pavement and Section 710, Concrete Pavement, except that Articles 700-2, 700-15, 710-3, 710-4, 710-8, 710-9, 710-10, and 710-11 shall be deleted.

2.08 RIGID CONCRETE PAVEMENT REINFORCING

- A. Reinforcing, if specified, shall be as shown on the Structural Drawings and as specified under Section 03301, Concrete and Reinforcing Steel.

2.09 CONCRETE CURB AND GUTTERS

- A. Concrete shall be air-entrained by admixture only and proportioned and mixed for a 28-day minimum compressive strength as indicated in the requirements of Section 03301, Concrete and Reinforcing Steel.
- B. Premolded expansion joint filler for expansion joints shall conform to ASTM D 1751 and shall be 1/2-inch thick, minimum.

2.10 ASPHALT TACK COAT

- A. All work, including materials, associated with asphalt tack coat shall be in accordance with Section 605, Asphalt Tack Coat, of the NCDOT Standard Specifications, except that Article 605-10 shall be deleted.

PART 3 -- EXECUTION

3.01 EMBANKMENT

- A. The embankment shall be constructed in accordance with Section 02200, Earthwork.

3.02 SUBGRADE

- A. The subgrade, where shown on the Drawings, shall be aggregate stabilized by the addition and mixing of coarse aggregate with the top 3-inches of subgrade in accordance with NCDOT Section 510-4. Aggregate stabilization shall be applied to the subgrade at a rate of 300-pounds per square yard. Following the application of stabilizer aggregate, the subgrade shall be formed true to crown and

grade, and shall be compacted with a minimum of four (4) passes of a 15-ton vibratory roller to conform to the maximum densities determined by AASHTO T99 Standard Specifications.

3.03 BASE COURSE

- A. The finished base course of all paving shall be ABC and shall be of the thickness shown on the Drawings, formed true to crown and grade. Gravel roads, including repair to existing gravel roads shall be ABC and shall be of the thicknesses shown on the Drawings, formed true to crown and grade. No fill material except new ABC shall be placed on top of existing gravel.

3.04 ASPHALT CONCRETE INTERMEDIATE COURSE (TYPE I19.0C)

- A. Asphalt Concrete Intermediate Course (Type I19.0C) shall be placed and compacted on the aggregate base course in layers not to exceed 2-inches and at the rate of 114 pounds per square yard per inch. Thicknesses shall be as shown on the Drawings.

3.05 ASPHALT CONCRETE SURFACE COURSE (TYPE S9.5B)

- A. Prior to placement of the asphalt concrete surface course, the intermediate course shall be inspected for damage or defects and repaired to the satisfaction of the Engineer. The surface of the intermediate course shall be approved by the Engineer.
- B. The asphalt tack coat shall be applied to the surface of the approved intermediate course as described in NCDOT Section 605. Equipment for applying the tack coat shall be power-oriented pressure spraying or distributing equipment suitable for the materials to be applied and approved by the Engineer.
- C. The Asphalt Concrete Surface Course shall be placed and compacted on the intermediate course in layers not to exceed 2-inches and at the rate of 110-pounds per square yard per inch. Thicknesses shall be as shown on the Drawings.

3.06 RIGID PORTLAND CEMENT CONCRETE

- A. The subgrade and base course beneath portland cement concrete pavement shall be prepared in accordance with the applicable Sections of these Specifications and referenced Standard Specifications, except that the Contractor shall use an approved automatically controlled fine grading machine to produce final subgrade and base surfaces meeting the lines, grades, and cross sections (thicknesses) shown on the Drawings or established by the Engineer.
- B. The surface of the base shall be damp at the time the concrete is placed. The Contractor shall sprinkle the base when necessary to provide a damp surface.

The Contractor shall satisfactorily correct all soft areas in the subgrade or base prior to placing concrete.

- C. Hauling over the base course shall not be allowed except where specifically permitted by and in writing by the Engineer. The Engineer may allow equipment dumping concrete to operate on the base to the extent and under the conditions the Engineer deems necessary to facilitate placing and spreading the concrete.
- D. Installation of the rigid concrete pavement shall be in accordance with the details shown on the Drawings and Division 3 - Concrete. The rigid concrete pavement shall cure a minimum of ten (10) calendar days and until the concrete has attained a minimum flexural strength of 550 psi as indicated by flexural strength testing. The Contractor shall coordinate and pay for all flexural strength testing with a minimum of four (4) 6-inch by 6-inch by 20-inch beams for every fifty (50) cubic yards of pavement concrete installed.
- E. Contraction joints shall be spaced at intervals as shown on the Drawings. Transverse contraction joints shall be formed by an approved joint insert. Expansion joints shall be placed when the pavement abuts a structure using 1-inch expansion joint material (filler) and sealant as specified herein.

3.07 CONCRETE CURB AND GUTTER

- A. The expansion joint filler for concrete curb and gutters shall be cut to conform with the cross section of the curb. Expansion joints shall be spaced at intervals of not more than 25-feet. Formed control joints shall be installed at intervals not exceeding 10 feet. Depth of joint shall be 1/3 the thickness. Curved forms shall be used where radii are indicated; straight segments shall not be permitted. Upon removal of the forms, exposed curb faces shall be immediately rubbed down to a smooth and uniform surface. No plastering shall be permitted.

3.08 UNDERGROUND UTILITY LINES

- A. Where an underground utility line is beneath the new roadway, the backfilling shall be carried out with special care, and the final consolidation shall be accomplished by a vibratory roller. Construction of the roadway over the trench shall be deferred as long as practicable.

3.09 JUNCTION WITH OTHER PAVING

- A. Where new asphalt concrete pavement abuts existing asphalt concrete pavement, the existing pavement shall be cut back to insure obtaining the specified compaction of the new pavement courses and interlocking adjoining courses. Existing subbase courses shall be cut back from the subgrade level of the new pavement on a one-on-one slope into the existing pavement, and the asphalt courses of the existing pavement shall be removed for an additional 6-inches back from the slope. The edge of the existing asphalt courses shall be saw cut straight

and true. The faces between new and existing asphalt courses shall receive an application of tack coat.

- B. Where new asphalt concrete pavement abuts existing rigid concrete paving, saw cut the existing concrete edge to provide a clean, straight, vertical face. Remove all loose or deteriorated concrete at the interface. Remove all debris, dust, and loose material from both the existing concrete edge and adjacent base/subbase. Apply uniform tack coat along the vertical face of the concrete edge and adjacent prepared base. Allow to break (become tacky) before asphalt placement. Place asphalt mix in accordance with project requirements. After cooling, seal the interface joint with approved joint sealant to prevent water infiltration.
- C. Where new rigid concrete pavement abuts existing rigid concrete or asphalt concrete paving, the existing paving shall be saw cut straight and true. An expansion joint of a 1/2-inch minimum thickness with filler material and sealant shall be placed between the new concrete pavement and the existing rigid concrete or asphalt concrete paving.

3.10 ASPHALT CONCRETE OVERLAY

- A. Where asphalt concrete is proposed to be placed over an existing asphalt or rigid concrete surface, the surfaces shall be thoroughly cleaned by power brooming and a tack coat shall be applied in accordance with NCDOT Section 605, Asphalt Tack Coat, of the NCDOT Standard Specifications, prior to installing the overlay. The overlay shall be applied in accordance with Subsections 2.06 and 3.05 and Standard Details shown on the Drawings.

-END OF SECTION-

SECTION 02605

PRECAST CONCRETE MANHOLES AND STRUCTURES

PART 1: GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials and equipment required to install precast concrete structures, frames and covers, access hatches, and appurtenances as shown on the Drawings and as specified herein.

1.02 RELATED WORK

- A. Section 02200 – EXCAVATION, BACKFILL, AND COMPACTION
- B. Section 02612 – REINFORCED CONCRETE PIPE

1.03 SUBMITTALS

- A. Shop drawings, product data, materials of construction, and details of installation shall be submitted in accordance with Section 01340. Submittals shall include the following:

1. Base sections, riser sections, eccentric and concentric conical top sections, flat slab tops, and grade rings with notarized certificate indicating compliance with ASTM C478.
2. Pipe connections.
3. Frame and cover with notarized certificate indicating compliance with ASTM A48, Class 30.
4. Method of repair for minor damage to precast concrete sections.
5. Building brick with notarized certificate indicating compliance with ASTM C62.
6. Layout drawings of all pipe trenches which shall include component part outline dimensions location of each part in the system, intended loading (pedestrian or H-20), the number, identification, and location of each pipe within trenches, and a complete bill of material.

- B. Design Data

1. Precast concrete structures:
 - a. Sectional plan(s) and elevations showing dimensions and reinforcing steel placement.

- b. Structural calculations including assumptions.
- c. Concrete design mix.

C. Test Reports

- 1. Precast concrete structures:
 - a. Concrete test cylinder reports from an approved testing laboratory certifying conformance with specifications.

1.04 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

- 1. ASTM A48 - Specification for Gray Iron Castings.
- 2. ASTM A615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- 3. ASTM C32 - Specification for Sewer and Manhole Brick (Made from Clay or Shale).
- 4. ASTM C33 - Specification for Concrete Aggregates.
- 5. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale)
- 6. ASTM C150 - Standard Specification for Portland Cement
- 7. ASTM C207 - Specification for Hydrated Lime for Masonry Purposes
- 8. ASTM C443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets
- 9. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections
- 10. ASTM D4101 - Specification for Polypropylene Plastic Injection and Extrusion Materials.

B. American Concrete Institute (ACI)

- 1. ACI 318 - Building Code Requirements for Reinforced Concrete
- 2. ACI 350R - Concrete Sanitary Engineering Structures

C. American Association of State Highway and Transportation Officials (AASHTO)

- 1. Standard Specifications for Highway Bridges

- D. Occupational Safety and Health Administration (OSHA)
- E. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

- A. All material shall be new and unused.
- B. Materials' quality, manufacturing process and finished sections are subject to inspection and approval by the ENGINEER or RPR. Inspection may be made at place of manufacture, at work site following delivery, or both.
- C. Materials will be examined for compliance with ASTM specifications, these Specifications and approved manufacturer's drawings. Additional inspection criteria shall include: appearance, dimensions(s), blisters, cracks and soundness.
- D. Materials shall be rejected for failure to meet any Specification requirement. Rejection may occur at place of manufacture, at work site, or following installation. Mark for identification rejected materials and remove from work site immediately. Rejected materials shall be replaced at no cost to OWNER.
- E. Repair minor damage to precast concrete sections by approved method if repair is authorized by ENGINEER.

PART 2: PRODUCTS

2.01 GENERAL

- A. Reference to a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.
- B. Like items of materials/equipment shall be the end products of one manufacturer in order to provide standardization for appearance, operation, maintenance, spare parts and manufacturer's service.
- C. Provide lifting lugs or holes in each precast section for proper handling.

2.02 PRECAST CONCRETE MANHOLE SECTIONS

- A. Precast concrete base sections, riser sections, transition top sections, flat slab tops and grade rings shall conform to ASTM C478 and meet the following requirements:

1. Bottom slab thickness shall equal the riser wall thickness or flat slab top thickness, whichever is greater.
2. Top section shall be eccentric cone or concentric cone as shown on the drawings where cover over pipe exceeds 4 feet; top section shall be flat slab where cover over top of pipe is 4 feet or less.
3. Base, riser and transition top sections shall have tongue and groove joints.
4. Sections shall be cured by an approved method.
5. Precast concrete sections shall be shipped after concrete has attained 3,000 psi compressive strength.
6. Design precast concrete base, riser, transition top, flat slab top and grade ring for a minimum H-20 loading.
7. Mark date of manufacture, name and trademark of manufacturer on the inside of each precast section.
8. Construct and install precast concrete base as shown on the Drawings.
9. Provide integrally cast knock-out panels in precast concrete manhole sections at locations, and with sizes shown on Drawings. Knock-out panels shall have no steel reinforcing.

2.03 PRECAST CONCRETE STRUCTURES

- A. Precast reinforced concrete structures shall be supplied by an Approved manufacturer. Refer to Drawings for inside dimensions, headroom requirements and minimum thickness of concrete.
- B. Manufacturer shall notify ENGINEER at least five working days prior to placing concrete during manufacturing process. ENGINEER may inspect reinforcing steel placement prior to placing concrete.
- C. Structural design calculations and Drawings shall be prepared and stamped by a Professional ENGINEER registered in North Carolina.
- D. Design Criteria
 1. Precast concrete
 - a. Minimum compressive strength shall be 5,000 psi at 28 days.
 - b. Maximum water content shall be six gallons per 94 pound sack of cement.

- c. Minimum cement content shall be six 94 pound sacks of cement per cubic yard of concrete.
2. Manufactured products
- a. Conform to ACI 318 and ACI 350R.
 - b. Analyze walls and slabs using accepted engineering principals.
 - c. When "fy" exceeds 40,000 psi, "z" (ACI 318) shall not exceed 95,000 psi. "fs" shall not exceed 50 percent of "fy".
 - d. Design products to support their own weight, weight of soil at 130 pcf, and a live load equal to AASHTO HS-20 or 300 psf, whichever is applicable, applied to top slab.
 - e. Cast base slab and walls together to form a monolithic base section.
 - f. Design structure walls for a water pressure of 90 psf. Originate pressure diagram at finished ground surface. Include lateral pressure from vehicles in accordance with AASHTO.
 - g. Consider discontinuities in structure produced by openings and joints. Provide additional reinforcing around openings. Frame openings to carry full design loads to support walls.
 - h. Prevent flotation, with ground water level at finished ground surface, by dead weight of structure and soil load above structure. Do not consider skin friction, soil friction, or weight of equipment in structure.
 - i. Locate horizontal wall joints 18-in. minimum from horizontal centerline of wall openings.
 - j. Design structure with a minimum number of joints. Maximum number of structure sections, including top slab, shall be four.
 - k. Provide lifting hooks for top slab.
 - l. Locate access openings, wall sleeves and pipe penetrations as shown on Drawings.
 - m. Wall sleeves shall be provided to the precast concrete manufacturer.

2.04 BRICK MASONRY

- A. Bricks shall be sound, hard, uniformly burned, regular and uniform in shape and size. Underburned or salmon brick shall not be acceptable. Only whole brick shall be used.
 - 1. Bricks for channels and shelves shall conform to ASTM C32, Grade SS except that the mean of five tests for absorption shall not exceed 8 percent and no individual brick exceed 11 percent.
 - 2. Bricks for raising manhole frames to finished grade shall conform to ASTM C62.
- B. Mortar shall be composed of one-part portland cement, two parts sand, and hydrated lime not to exceed 10 lbs to each bag of cement. Portland cement shall be ASTM C150, Type II; hydrated lime shall conform to ASTM C207.
- C. Sand shall be washed, cleaned, screened, well graded with all particles passing a No. 4 sieve and conform to ASTM C33.

2.05 JOINTING PRECAST SECTIONS

- A. Seal tongue and groove joints of precast manhole [and structure] sections with either rubber "O"-ring gasket or preformed flexible joint sealant. "O"-ring gasket shall conform to ASTM C443. Preformed flexible joint sealant shall be Kent Seal No. 2 as manufactured by Hamilton-Kent; Ram-Nek as manufactured by K.T. Snyder Company or equal.
- B. Completed joint shall withstand 15 psi internal water pressure without leakage or displacement of gasket or sealant.

2.06 MANHOLE RUNGS

- A. Manhole rungs shall be either of the following types:
 - 1. Cast aluminum alloy 6061-T6, drop front design, 16-in wide with an abrasive step surface conforming to OSHA requirements.
 - 2. Steel reinforced, copolymer polypropylene, 14-in wide, M.A. Industries Inc, PF Series or equal. Copolymer polypropylene shall conform to ASTM D4101 Classification PP200 B33450 Z02. Steel reinforcing shall be 2-in diameter, conforming to ASTM A615, Grade 60 and shall be continuous throughout rung.

2.07 ALUMINUM HATCHES

- A. Prefabricated checkerplate aluminum floor hatches shall be Bilco Co., Type J or Type JD; equal by Halliday Products, Inc., or equal, sized as shown. Hatches with either dimension over 3-feet 6-inches tall shall be double leaf type. Hatches shall be designed for AASHTO H20 loading in all roadways, parking lots, or areas subjected to vehicular traffic, and a live load of 300 lbs per sq ft in all other locations. Heavy duty stainless steel hardware shall be used throughout the fabrication. Doors shall be equipped with heavy duty stainless steel hinges, stainless steel pins, spring operators and automatic hold open arm having a vinyl covered release handle. Hinges shall be through-bolted to the cover and frame with tamperproof stainless steel lock bolts and stainless steel bolt and lock nut, respectively.

2.08 PIPE CONNECTIONS TO MANHOLE

- A. Connect pipe to manhole in the following ways:
 - 1. Grout in place - Precast manhole section shall have a formed, tapered circular opening larger than the pipe outside diameter. Grout shall be non-shrink and waterproof equal to Hallemite; Waterplug or Embeco. Plastic pipe shall have a waterstop gasket secured to pipe with a stainless steel clamp.
 - 2. Flexible sleeve - Integrally cast sleeve in precast manhole section or install sleeve in a formed or cored opening. Fasten pipe in sleeve with stainless steel clamp(s). Coat stainless steel clamp(s) with bituminous material to protect from corrosion. Flexible sleeve shall be Lock Joint Flexible Manhole Sleeve; Kor-N-Seal connector; PSX Press-Seal Gasket or equal.
 - 3. Compression gasket - Integrally cast compression gasket in precast manhole section. Insert pipe into compression gasket. Compression gasket shall be A-Lok, or equal.

PART 3: EXECUTION

3.01 INSTALLATION

- A. Manhole and Vault Installation
 - 1. Manholes and vaults shall be constructed to the dimensions shown on the Drawings and as specified in these Specifications. Protect all work against flooding and flotation. Construct cast-in-place bases in accordance with the requirements of Division 3 and the details shown on the Drawings.

2. Place base on a bed of 12-in screened gravel as shown on the Drawings. Set manhole base grade so that a maximum grade adjustment of 8-in is required to bring the manhole frame and cover to final grade.
3. Use precast concrete grade rings or brick and non-shrink mortar to adjust manhole frame and cover to final grade.
4. Set precast concrete barrel sections and structures plumb with a 1/4-in maximum out of plumb tolerance allowed. Seal joints of precast barrel sections with either a rubber "O" ring set in a recess or preformed flexible joint sealant in sufficient quantity to fill 75 percent of the joint cavity. Fill the outside and inside joint with non-shrink mortar and finished flush with the adjoining surfaces. Caulk the inside of any leaking barrel section joint with lead wool or non-shrink grout to the satisfaction of the ENGINEER.
5. Allow joints to set for 14 hours before backfilling unless a shorter period is specifically approved by the ENGINEER.
6. Plug holes in the concrete barrel sections required for handling with a non-shrinking grout or non-shrinking grout in combination with concrete plugs. Finish flush on the inside.
7. Cut holes in precast sections to accommodate pipes prior to setting manhole sections in place to prevent jarring which may loosen the mortar joints.
8. Backfill carefully and evenly around manhole and vault sections.

B. Manhole Pipe Connections

1. Construct manhole pipe connections, including pipe stubs, as specified above. Close or seal pipe stubs for future connections with a gasketed watertight plug.

C. Manhole Rung Installation

1. Aluminum Manhole Rungs
 - a. Grout aluminum manhole rungs into precast sections, on 12-in centers. Preform holes in riser and cone sections for rungs during casting. Holes for rungs shall be 1-1/8-inch in diameter and a minimum of 3-1/2-in deep.

- b. Grout rungs into precast sections immediately after casting and placing in the curing area, or immediately after coring holes for manhole rungs into base section. Fill holes with grout consisting of Portland Type II cement and mortar sand in a 1 to 2 ratio mixed to a putty consistency.
 - c. Paint those parts of the rungs which are embedded with a heavy coating of zinc chromate or other approved paint.
 - 2. Steel Reinforced Polypropylene Plastic Manhole Rungs
 - a. Preform holes for manhole rungs during casting of the riser and cone sections, using tapered form pins specifically made for preforming manhole rung holes.
 - b. Drive manhole rungs into preformed holes after concrete has developed a compressive strength of 3,000 psi.
 - c. Alternatively, cast manhole rungs into riser and cone sections when concrete is placed.
 - d. Drilling holes for manhole rungs may be used to accommodate field conditions when approved by the ENGINEER. Drill holes of diameter, spacing and depth required by manhole rung manufacturer.
 - 3. Pull-out resistance test
 - a. All manhole rung installation methods shall withstand a pull-out resistance test of 1,500 pounds.
- D. Setting Manhole Frame and Cover
 - 1. Set manhole covers and frames in a full mortar bed. Utilize bricks or precast concrete grade rings, a maximum of 8-in thick, to assure frame and cover are set to the finished grade. Set manhole frame and cover to final grade prior to placement of permanent paving.
- E. Aluminum Hatch Installation
 - 1. Where aluminum contacts a dissimilar metal, apply a protective paint to the aluminum and to the dissimilar metal.
 - 2. Where aluminum contacts masonry or concrete, apply a heavy coat of approved alkali resistant paint to the masonry or concrete.
 - 3. Where items are cast into concrete, backpaint contact areas before setting.

3.02 LEAKAGE TESTS

- A. Test each manhole or vault for leakage. ENGINEER shall observe each test. Perform exfiltration test as described below:
- B. Assemble manhole in place; fill and point all lifting holes and exterior joints within six feet of the ground surface with an approved non-shrinking mortar. Test prior to placing the shelf and invert and before filling and pointing the horizontal joints below 6-ft of depth. Lower ground water table below bottom of the manhole for the duration of the test. Plug all pipes and other openings into the manhole and brace to prevent blow out.
- C. Fill manhole with water to the top of the cone section. If the excavation has not been backfilled and no water is observed moving down the surface of the manhole, the manhole is satisfactorily water-tight. If the test, as described above is unsatisfactory as determined by the ENGINEER, or if the manhole excavation has been backfilled, continue the test. A period of time may be permitted to allow for absorption. Following this period, refill manhole to the top of the cone, if necessary and allow at least eight hours to pass. At the end of the test period, refill the manhole to the top of the cone again, measuring the volume of water added. Extrapolate the refill amount to a 24-hour leakage rate. The leakage for each manhole shall not exceed one gallon per vertical foot for a 24-hour period. If the manhole fails this requirement, but the leakage does not exceed three gallons per vertical foot per day, repairs by approved methods may be made as directed by the ENGINEER. If leakage due to a defective section of joint exceeds three gallons per vertical foot per day, the manhole shall be rejected. Uncover the rejected manhole as necessary and to disassemble, reconstruct or replace it as directed by the ENGINEER. Retest the manhole and, if satisfactory, fill and paint the interior joints.
- D. No adjustment in the leakage allowance will be made for unknown causes such as leaking plugs, absorptions, etc. It will be assumed that all loss of water during the test is a result of leaks through the joints or through the concrete.
- E. An infiltration test may be substituted for an exfiltration test if the ground water table is above the highest joint in the manhole. If there is no leakage into the manhole as determined by the ENGINEER, the manhole will be considered water-tight. If the ENGINEER is not satisfied, testing shall be performed as described hereinbefore.

F. Leakage Tests for Structures

1. The ENGINEER will visually inspect structure(s) for possible leaks before backfilling of structures is allowed. Seal all joints to the satisfaction of the ENGINEER.
2. The ENGINEER may require an exfiltration test as described for manholes on any structure for which he/she deems the test appropriate.

3.03 CLEANING

- A. Thoroughly clean all new manholes of all silt, debris and foreign matter of any kind, prior to final inspections.

END OF SECTION

SECTION 02612

REINFORCED CONCRETE PIPE AND FITTINGS

PART 1: GENERAL

1.01 SCOPE OF WORK

- A. The CONTRACTOR shall furnish all labor, equipment, materials and incidentals necessary to install and test reinforced concrete pipe fittings for storm drain complete as shown on the Drawings and as specified herein.
- B. All pipes shall be manufactured for this project and no pipe shall be furnished from stock.
- C. This work shall include, but not be limited to installing reinforced concrete pipe including all excavation, backfilling, sheeting, slope protection, drainage, concrete work, riprap, grading and all other work necessary to complete the construction, installation and testing of the reinforced concrete pipe.

1.02 RELATED WORK

- A. Section 02200 – Excavation, Backfill, and Compaction
- B. Section 02605 – Precast Concrete Structures

1.03 QUALIFICATIONS

- A. All reinforced concrete pipe and fittings shall be furnished by a single manufacturer who is fully experienced, reputable, and qualified to manufacture the pipe to be furnished.
- B. Reinforced concrete pipe and fittings shall conform to all Applicable ASTM Standards and these specifications.

1.04 SUBMITTALS

- A. At least 45 days prior to Reinforced Concrete Pipe installation submit the following to in accordance with Section 01340:
 - 1. The names of the suppliers
 - 2. Shop Drawings of pipe and fittings including pipe class or design, backup computations including reinforcement, class coding, joints, list of abbreviated terms with meaning.

- B. The locations of all pipes shall conform to the locations indicated on the Drawings. In most cases, a certain amount of flexibility in positioning of pipes will be allowed, especially where new pipes will connect to existing structures or piping. Horizontal and vertical deflections may require beveled, special deflection, or short pipe. The deflection of joints shall not exceed 75 percent of that recommended by the manufacturer.
- C. The pipe manufacturer shall inspect all pipe joints for out-of-roundness and pipe ends for squareness. The manufacturer shall furnish to the ENGINEER a notarized affidavit stating all pipe meets the requirements of ASTM, ASCE, ANSI, AWWA, etc., these Specifications, and the joint design with respect to square ends and out-of-round joint surfaces.
- D. Furnish to the ENGINEER sworn certificates that all tests and inspections required by the Specifications under which the pipe is manufactured have been satisfied.

1.05 INSPECTION

- A. All pipe and fittings to be installed under this contract may be inspected at the site of manufacture for compliance with these Specifications by an independent laboratory selected by the ENGINEER. The manufacturer's cooperation shall be required in these inspections. The cost of inspection by an independent laboratory, will be borne by the OWNER.

PART 2: PRODUCTS

2.01 REINFORCED CONCRETE PIPE

- A. Except as otherwise specified herein or as indicated on the Drawings, pipe shall conform to ASTM Standard Specifications for Storm Drain, and Designation C76, Class III Wall B. Reinforcement shall be full circular cage. Neither elliptical nor quadrant reinforcement will be allowed.
- B. The pipe shall be capable of withstanding construction equipment loading which may be encountered during the progress of the work. Any pipe damage during construction operations shall be promptly and satisfactorily repaired or replaced at the CONTRACTOR's expense.
- C. Non-air-entraining portland cement conforming to ASTM Specification C150, Type II shall be used, except as otherwise approved in writing by the ENGINEER. The use of any other admixture will not be permitted.
- D. Fine aggregate shall consist of washed inert natural sand conforming to the requirements of ASTM Specifications C33, except for gradation, with a maximum loss of 8 percent when subjected to five cycles of the soundness test using magnesium sulfate.

- E Coarse aggregate shall consist of well-graded crushed stone or washed gravel conforming to the requirements of ASTM Specification C33, except for gradation, with a maximum loss of 8.0 percent when subjected to five cycles of the soundness test using magnesium sulfate.
- F **The 28-day compressive strength of the concrete shall be not less than 4,000 psi.** The pipe interior shall comprise a continuous integral cement skin and shall be smooth and even, free from roughness, projections, indentations, offsets or irregularities. The concrete mass shall be dense and uniform. The average absorption for the drainage pipe shall not exceed 5.0 percent of the dry weight and no specimen shall exceed 9.0 percent. Reinforcement in the bell and spigot shall be adequate to prevent damage to concrete during shipping, handling and installation.
- G The pipe shall be clearly marked as required by ASTM C76 in a manner acceptable to the ENGINEER. The markings may be at either end of the pipe for the convenience of the manufacturer, but for any one size shall always be at the same end of each pipe length. Pipe shall not be shipped until the compressive strength of the concrete has attained 3,000 psi and not before five (5) days after manufacture, and/or repair, whichever is the longer.
- H Piping shall have a minimum laying length of approximately 8 feet, except for closure and other special pieces as approved by the ENGINEER. The length of the concrete pipe at each structure shall be as shown but, in any case, shall not exceed 3 feet.
- I Unsatisfactory or damaged pipe will be either permanently rejected or returned for minor repairs. All pipe which has been damaged after delivery will be rejected. If damaged pipe already has been laid in the trench it shall be acceptably repaired or removed and replaced at the sole discretion of the ENGINEER entirely at the CONTRACTOR's expense. Pipe may be rejected for any of the following reasons:
1. Exposure of any wires and positioning spacers or chairs used to hold the reinforcement cage in position, or steel reinforcement in any surface of pipe, except for ends of longitudinal reinforcing. Type 304 stainless steel chairs and spacers may be used in lieu of this requirement.
 2. Transverse reinforcing steel found to be in excess of 1/4-inch out of specified position after the pipe is molded.
 3. Any shattering or flaking of concrete at a crack.

4. Air bubble voids (bugholes) on the interior and exterior surfaces of the pipe exceeding 1/4-inch in depth unless properly and soundly filled with mortar or other approved material.
5. Unauthorized application of any wash coat of cement or grout.
6. A hollow spot (identified by tapping the internal surface of the pipe) which is greater than 30 inches in length or wider than 3 times the specified wall thickness. Repair of such defective areas not exceeding these limitations may be made.
7. Defects that indicate imperfect molding of concrete; or any surface defect indicating honeycomb or open texture (rock pockets) greater in size than an area equal to a square with a side dimension of 2-1/2 times the wall thickness or deeper than two times the maximum graded aggregate size or local deficiency of cement resulting in loosely bonded concrete, the area of which exceeds in size the limits or area described in Paragraph 6 above, when the defective concrete is removed. Repair of such defects not exceeding these limits may be made as provided in Paragraph 6 above.
8. Any of the following cracks:
 - a. A crack having a width of 0.005 inch to 0.01 inch throughout a continuous length of 36 inches or more.
 - b. A crack having a width of 0.01 inch to 0.03 inches or more throughout a continuous length of 1 foot or more.
 - c. Any crack greater than 0.005 inch extending through the wall of the pipe and having a length in excess of the wall thickness.
 - d. Any crack showing two visible lines of separation for a continuous length of 2 feet or more, or an interrupted length of 3 feet or more anywhere in evidence, both inside and outside.
 - e. Cracks anywhere greater than 0.03 inch in width.
9. Transverse reinforcing steel found to be in excess of 1/4-inch out of specified position after the pipe is molded.
10. A deficiency greater than 1/4-inch from the specified wall thickness of pipe.

11. A deficiency greater than 1/4-inch from the specified wall thickness of pipe 30 inches or smaller in internal diameter.
 12. A deficiency greater than 6 percent from the specified wall thickness of pipe larger than 30 inches in internal diameter, except that the deficiency may be 8 percent adjacent to the longitudinal form joint, provided that the additional deficiency does not lie closer than 20 percent of the internal diameter of the pipe. The deficiencies in wall thickness permitted herein do not apply to gasket contact surfaces in gasketed joint pipe.
 13. A variation from the specified internal diameter in excess of 1 percent, or interior surfaces which have been reworked after placing of concrete. The variation in internal diameter permitted herein does not apply to gasket contact surface in gasketed joint pipe.
- J Pits, blisters, rough spots, breakage, and other imperfections may be repaired, subject to the approval of the ENGINEER, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final approval. Non-shrink cement mortar used for repairs shall have a minimum compressive strength of 6,000 psi at the end of 7 days and 7,000 psi at the end of 28 days, when tested in 3-inch cylinders stored in the standard manner. Epoxy mortar may be utilized for repairs subject to the approval of the ENGINEER.
- K Joints for concrete pipe shall be the tongue and groove type of joint with provisions for using a round rubber "O-Ring" gasket in a recess in the spigot end of the pipe. The bevel on the bell of the pipe shall be between 1-1/2 degree and 2-1/2 degree and the annular open space at the gasket when the joint is made up and pipes are centered and in line shall not exceed 3/16-inch. The faces of pipe in contact with the gasket shall be true, and free of irregularities.
1. The round rubber "O-Ring" gaskets shall conform to ASTM C443 Specifications for Joints for Circular Concrete Sewer and Culvert Pipe using Rubber Gaskets.
 2. The manufacturer shall supply test data and affidavits showing compliance with these requirements. Tests shall have been conducted within six months of the start of manufacture of the pipe.
 3. The pipe manufacturer shall furnish information and supervise the installation of at least the first five joints installed by the CONTRACTOR. The ends of the pipe shall be made true to form and dimension by casting against steel forms.

- L Reinforced concrete bends shall be cast to the degree of curvature required or fabricated by cutting the pipe at the required angle and then rejoining the sections. Bends may be smooth or mitered providing mitered angles do not exceed 22-1/2 degrees and bends have a radius divided by the pipe diameter greater or equal to one.
- M Joints for concrete pipe 48 inches in diameter and larger shall be of the rubber and steel joint design utilizing a steel bell, a steel spigot, a round rubber gasket and meeting the requirements of ANSI/AWWA C301. Steel skirts shall be welded to the spigot ring and adequately welded to internal reinforcing. The steel in the bells shall be adequate to resist cracking the concrete during installation. Before the first pipe is shipped the manufacturer shall make a fit-up test in the presence of the ENGINEER.
- N Joints for concrete pipe less than 48 inches in diameter shall be the tongue and groove or bell and spigot type of joint with provisions for using a round rubber "O-Ring" gasket in a recess in the spigot end of the pipe. The bevel on the bell of the pipe shall be between 1-1/2 degrees and 2-1/2 degrees. The diameters of the joint surfaces which compress the gasket shall not vary from the true diameters by more than 1/16-inch.

PART 3: EXECUTION

3.01 GENERAL

- A. Care shall be taken in loading, transporting, and unloading to prevent injury to the pipe or coatings. Pipe or fittings shall not be dropped. All pipe or fittings shall be examined before laying, and no piece shall be installed which is found to be defective. Any damage to the pipe coatings shall be repaired as directed by the ENGINEER.
- B. All pipe and fittings shall be subjected to a careful inspection and hammer test just prior to being laid or installed. If any defective pipe is discovered after it has been laid it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional expense to the OWNER. All pipe and fittings shall be thoroughly cleaned before laying, shall be kept clean until they are used in the work, and when installed or laid, shall conform to the lines and grades required.
- C. All buried piping shall be installed to the lines and grades as shown on the Drawings. All underground piping shall slope uniformly between joints where elevations are shown.
- D. All pipe shall be sound and clean before laying. When laying is not in progress, including lunchtime, the open ends of the pipe shall be closed by watertight plugs or other approved means.

- E. Bevel and short pipe shall be used as necessary to meet site conditions and to provide a pipe installation as shown in the Drawings. The cost of all such pipe shall be included within the bid price for the pipe.

3.02 REINFORCED CONCRETE PIPE

- A. As soon as the excavation is completed to the normal grade required, the CONTRACTOR shall immediately place screened gravel bedding material in the trench, and then the pipe shall be firmly bedded in this gravel to conform accurately to the lines and grades indicated on the Drawings. Bedding material for bedding the pipe shall conform to the specifications under Section 02200.
- B. Bedding material, as specified, shall be placed and compacted to give complete vertical and lateral support for the lower section of the pipe. A depression shall be left in the bedding material at the joint to prevent bedding material from entering the bell and interfering with seating the spigot.
- C. The pipe bedding shall be compacted to give complete vertical and lateral support for the lower half of the pipe. A depression shall be left in the supporting materials at the joint to prevent contamination of the rubber gasket immediately before being forced home. Before the pipe is lowered into the trench, the bell and spigot must be cleaned and free from dirt. The gasket and bell shall be lubricated by a vegetable lubricant, which is not soluble in water, furnished by the pipe manufacturer and harmless to the rubber gasket. As soon as the spigot is centered in the bell of the previously laid pipe, it shall be brought fully home. Each gasket shall be carefully checked for proper positioning around the full circumference of the joint. Special measures shall be taken to ensure that the gaskets are properly positioned. For example, steel inserts may be required to prevent the pipe from going home until a feeler gauge is used to check the final position of the gasket, with special attention being given to the bottom half of the pipe. The CONTRACTOR shall be responsible for the means of forcing the pipe home and shall take care to prevent damage to the pipe ends. Any pipe so damaged shall be repaired or replaced at no cost to the OWNER. If necessary, the CONTRACTOR shall employ hand methods of pipe joining. For example, the pipe may be forced home by using jacks or come-alongs which shall be anchored sufficiently back along the pipeline so that the pulling force will not dislodge the pieces of pipe already in place, or by the proper manipulation of a backbone and cable sling.
- D. It is the contractor's responsibility to lay the pipe to the lines and grades shown on the Drawings.

- E. All joint gaskets are to be checked for position prior to full insertion in the bell in order to assure final correct jointing. Following full joint insertion, the space outside of the gasket shall be immediately filled with grout, followed by full joint grouting in accordance with the pipe manufacturer's recommendations.
- F. A cloth joint band or diaper held with wires shall be placed to cover the outside joint and prevent the entrance of dirt. Grout composed of one part cement to two parts of well-graded mason's sand shall be poured into the outside joint on one side of the pipe to at least the springline. Placing mortar with hand tools may be done with the upper half of the joint. Grout must fill the entire joint. All exposed metal surfaces of appurtenances shall be covered with a minimum of 3/4-inch of cement grout all around.
- G. The CONTRACTOR shall have the option of using a joint filler approved by the ENGINEER in place of the diaper-grout operation, except for restrained joints.

3.03 STRUCTURE AND MANHOLE CONNECTIONS

- A. Pipe stubs for all structure and manhole connections shall not exceed 2 feet in length.

3.04 TESTING

- A All pipelines shown as reinforced concrete pipe on the Drawings shall be subjected to gravity pipeline testing as specified herein. This requirement will remain unchanged if ductile iron or prestressed concrete cylinder pipe is substituted for reinforced concrete pipe. All other pipe including ductile iron pipe specifically called out of the Drawings shall be subjected to a pressure test.
- B Infiltration Test

- 1. Pipe shall be tested for infiltration wherever the groundwater level as measured through observation wells installed and removed by the CONTRACTOR is above the crown elevation of the pipe and shall be made after the backfill has been placed and the ground water allowed to return to normal elevation.

Infiltration tests shall be made under the supervision of the ENGINEER, and the length of line to be tested shall be not less than the length between adjacent manholes and not more than the total length of each size of pipe. The allowable infiltration shall be 200 gallons per inch of diameter per day per mile of pipe in each Section tested. There shall be no visible flowing or dripping.

2. If an inspection of the completed pipeline or any part thereof shows pipes or joints which allow noticeable infiltration of water, the defective work or material shall be replaced or repaired as directed.
3. Rates of infiltration shall be determined by means of V-Notch weirs, pipe spigots, or by plugs in the end of the pipe to be furnished and installed by the CONTRACTOR in an approved manner and at such times and locations as may be directed by the ENGINEER.

C Exfiltration Test

1. Leakage tests by exfiltration shall be made on any pipe that is founded in an area where the ground water level is below the crown of the pipe as measured through observation wells. Leakage tests by exfiltration shall be made before or after backfilling at the discretion of the ENGINEER. The length of pipe to be tested shall be such that the head over the crown at the upstream crown is not less than 2 feet and the head over the downstream crown is not more than 6 feet. The pipe shall be plugged by pneumatic bags or mechanical plugs in such a manner that the air can be released from the pipe while it is being filled with water. Before any measurements are made, the pipe shall be kept full of water long enough to allow absorption and the escape of any trapped air to take place. Following this, a test period of at least one (1) hour shall begin. Provisions shall be made for measuring the amount of water required to maintain the water at a constant level during the test period.
2. If any joint shows an appreciable amount of leakage, the jointing material shall be removed and the joint repaired. If any pipe is defective, it shall be removed and replaced. If the quantity of water required to maintain a constant level in the pipe does not exceed 200 gallons per inch of diameter per day per mile of pipe and if all the leakage is not confined to a few joints, workmanship shall be considered satisfactory. If the amount of leakage indicates defective joints or broken pipes, they shall be corrected or replaced.

D Air Testing

1. The CONTRACTOR may use an air test in lieu of the exfiltration test. If he elects to do this, he shall submit his proposed method of testing to the ENGINEER for approval. Air testing shall be performed in accordance with the procedures described in ASTM C828. The equipment shall be specifically designed and manufactured for testing pipelines with low-pressure air and shall be provided with an air regulator valve or air safety valve set to prevent the air pressure in the pipeline from exceeding 8 psig. If

the results of the air test are unsatisfactory, the CONTRACTOR shall perform the exfiltration test as outlined above.

3.05 CLEANING

- A At the conclusion of the work, thoroughly clean all pipelines by flushing with water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered the pipes during the construction period. Debris cleaned from the lines shall be removed from the low end of the pipeline. If after this cleaning, obstructions remain, they shall be removed. After the pipelines are cleaned and if the groundwater level is above the pipe or following a heavy rain, the ENGINEER will examine the pipes for leaks. If any defective pipes or joints are discovered, they shall be repaired.

END OF SECTION

SECTION 02821

CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes Specifications for the following:
 - 1. Galvanized steel chain link fencing and accessories.
 - 2. Aluminum coated chain link fencing and accessories.
 - 3. Polyolefin (PVC) coated chain link fencing and accessories.
 - 4. Manual Swing Gates.

1.02 SUBMITTALS

- A. General: Submit the following.
 - 1. Product data in the form of manufacturer's technical data, specifications, and installation instructions for gate operators, fence and gate posts, fabric, gates, and accessories.
 - 2. Shop drawings showing location of fence, gates, each post, and details of post installation, extension arms, gate swing, hardware, accessories and details of gate operator and associated conduits.
 - 3. Samples: If requested, samples of materials (e.g., fabric, wires, and accessories).

1.03 QUALITY ASSURANCE

- A. Perform work in accordance with the manufacturer's instructions.
- B. All materials, fabrication, and equipment covered in this specification shall be subject to the requirements of all latest revised applicable standards of ASTM, IEEE, NEMA, ANSI, etc.
- C. Fences furnished under this specification shall be built in accordance with all latest approved codes and standards except where specific requirements of this specification conflict with or supplement these standards. In such cases, the requirements of this specification shall take precedence.
- D. All components, equipment, parts and workmanship supplied shall be of the highest quality industrial grade construction and manufacturer. All parts and material must be new and unused.
- E. Contractors will field verify all measurements prior to fabrication.

1.04 QUALIFICATIONS

- A. Installer: Company specializing in installing the products specified in this section with a minimum of 5-years experience.
- B. Manufacturer: Products from qualified manufacturers having a minimum of five years experience manufacturing products specified in this section

PART 2 - PRODUCTS

2.01 FABRIC

- A. Steel Fabric: Comply with Chain Link Fence Manufacturer's Institute (CLFMI) Product Manual. Wire types to include zinc, aluminum coated and PVC coated.
 - 1. Galvanized Steel Finish: ASTM A 392, 9 gauge, Class 1, with not less than 1.2 oz. zinc per square ft. of uncoated wire surface.
 - 2. Aluminized steel wire core: ASTM A 491, 9 gauge, .4 oz/sf.
 - 3. Polyolefin elastomeric coating: ASTM F 668 Class 2b, 9 gauge with PVC coating 6 mil to 10 mil in thickness, thermally fused to zinc-coated steel core wire. Color to be specified by Architect.
- B. Helically wound and woven to height of 8' with 4 square inch (2x2) diamond mesh. Both selvages are to be twisted and barbed.

2.02 FRAMING

- A. Strength requirements for posts and rails conforming to ASTM F 1043.
- B. Steel pipe - Pipe shall be straight, true to section; Type I: ASTM F 1083, standard weight schedule 40; Hot-dipped galvanized after fabrication with minimum average 1.2 oz/ft² of coated surface area. The finish shall be resistant to corrosion, chalking, checking, abrasion, ultraviolet, and weathering in a highly corrosive salt spray and wind driven sand environment.
 - 1. When employed, Polyolefin Coated finish: In accordance with ASTM F1043, apply supplemental color coating of minimum 10 mils of thermally fused polyolefin in color to match fabric.

- C. Corner, terminal and pull posts: 2-7/8" od @ 5.79 lbs/ft.
- D. Line or intermediate posts: Post 2-3/8" od @ 3.65 lbs/ft.
- E. Braces 1-2/3" od @ 1.80 lbs/ft.
- F. Swing Gate Posts: Furnish posts according to the following gate widths:
 - 1. Up to 6 feet: 2-7/8" od @ 5.79 lbs/ft.
 - 2. Over 6 feet to 12 feet: 4" od 9.11 lbs/ft.
 - 3. Over 12 feet to 18 feet: 6-5/8" od 18.97 lbs/sf.
 - 4. Over 18 feet: 8-5/8" od 24.70 lbs/sf.
- G. Top/Bottom Rails: Unless specified otherwise, top and bottom rails are not utilized in typical applications.

2.02 FITTINGS AND ACCESSORIES

- A. Material: Comply with ASTM F 626. Mill-finished aluminum or galvanized iron or steel, finished to match framing.
- B. Zinc Coating: All steel and iron parts unless specified otherwise shall be hot-dip galvanized after fabrication to give average zinc coating not less than 1.2 ounces per square foot of surface area and no individual specimen shall show less than 1.0 ounce. The finish shall be resistant to corrosion, chalking, checking, abrasion, ultraviolet, and weathering in a highly corrosive salt spray and wind driven sand environment.
- C. Tension Wire: Not less than 7 gauge metallic-coated steel marcelled tension wire conforming to ASTM 824.
 - 1. Where applicable, thermally fused polyolefin applied to zinc coated steel wire conforming to ASTM F 1664 Class 2 b
- D. Tie Wires: 9 gauge galvanized steel wire for attachment of fabric to line posts. Double wrap 13 gauge for rails and braces. Hog ring ties of 12-1/2 gauge for attachment of fabric to tension wire.
- E. Post Brace Assembly: Double brace with Horizontal and 45° angled braces. Truss horizontal brace to terminal posts with minimum 5/16" diameter rod and adjustable turnbuckle capable of withstanding a tension of minimum 2,000 lbs.
- F. Post Caps: Corner, terminal and pull posts without barb arms shall

be provided with a weather-tight closure cap. Provide line post caps with loop to receive tension wire or top rail.

- G. Tension or Stretcher Bars: Galvanized steel with minimum length 2 inches less than full height of fabric, minimum cross-section of 3/16 inch by 3/4 inch. Provide one bar for each gate and end post, and two for each corner and pull post, except where fabric is integrally woven into post.
- H. Tension and Brace Bands: Minimum 3/4 inch-wide x 14 gauge thick galvanized steel.
- I. Barbed wire supporting arms: Pressed steel arms with provisions for attaching 3 rows of barbed wire spaced six (6) inches apart. Arms shall withstand 250 lb. downward pull at outermost end of arm without failure.
- J. Barbed wire: Shall consist of double strand steel wire minimum 13-3/4 gauge with 4 point barbs on approximately 4-inch centers. Wire size includes zinc, aluminum coated, and PVC coated.
 - 1. ASTM A 121, Standard Specification for Zinc Coated (Galvanized) Steel Barbed Wire.
 - 2. Aluminized steel wire with 14 gauge aluminum barbs, All aluminized gauge wire shall consist of a minimum coating of .40 ounces per sq. ft. of surface area.
 - 3. Thermally fused polyolefin coated per ASTM F 1665 Class 2b steel wire double-strand, with galvanized steel, 4 point barbs (without polyolefin finish).
- K. Razor Ribbon: Stainless Steel General Purpose Barbed Tape Obstacle (GPBTO) razor ribbon coil, is to be attached onto the outside (threat side) of the barbed wire top guard with a loop separation of between ten and twelve (10-12) inches and a loop diameter of 18 inches using stainless steel clips capable of withstanding a minimum pull load of 200 pounds for a minimum of 30 seconds without separation or other damage.

2.04 SWING GATES

- A. General: Gates to be fabricated in accordance with ASTM F 900 using galvanized steel members 1.90" OD schedule 40, welded at all corners. Welded joints coated, employing an aluminum or zinc-rich paint. Gates over 10' wide shall have intermediate horizontal and/or vertical member as required spaced so that no members are more than 8' apart. Internal gate bracing may be 1-2/3" od

pipe. Swing gates shall be Stephens Pipe & Steel CL-43 Industrial DD Gate 4 Uprights or equal.

- B. A minimum of one pedestrian conveniently located 4'-wide swing gate will be provided for emergency ingress and egress.
- C. Chain link fabric, fittings and accessories are to match that of the fence section. Fabric is to be attached to frame by means of tension on fabric bands at the external vertical members and attached by means of tie wires to all horizontal and any internal vertical members. These bands and ties to be a maximum of 15" centers. The fabric is attached to the bands using a fabric or tension bar.
- D. Hinges: Non-lift-off type structurally capable of supporting gate and capable of swinging 180° gate opening. Provide 1-1/2 pair of hinges for each leaf over 6-foot nominal height.
- E. Latch: Fulcrum (forked) type to permit operation from either side of gate with provision for pad locking as an integral part of the latch.
- F. Double gates: Provide drop bar with integrated forked latch to hold one leaf stationary and engage the active leaf when closed. A provision for pad locking shall be an integral part of the latch.
- G. Keepers (hold backs), which automatically engages gate leaf and holds it in open position until manually released, should be provided for any gate leaf 5' or greater.
- H. Barbed wire topping: When utilized, extend vertical members of gate frame 12". Barbed wire attached to frame using fabric or tension bands to hold barbed wire from moving out of position on the gate.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Install fence in compliance with ASTM F 567 and manufacturer's instructions. Do not begin installation and erection before final grading is completed, Verify that preparations in fence locations are complete, without irregularities that would interfere with fence installation, correct unsatisfactory conditions before starting work.
- B. Clear Zone: 10' (ten foot) clearance is to be maintained clear of trees, foliage and structures on both sides of the fence line.

- C. Excavation: Drill or hand-excavate (using post-hole digger) holes for posts at the diameter and spacing indicated, in firm, undisturbed or compacted soil.
1. If not indicated on drawings, excavate holes for each post to minimum diameter recommended by fence manufacturer, but not less than 4 times largest cross-section of post.
 2. Unless otherwise indicated, excavate hole depths approximately 3-inches lower than post bottom, with bottom of posts set not less than 36 inches below finish grade surface.
- D. Setting Posts: Center and align posts in holes 3 inches above bottom of excavation. Space at 10 feet o.c, unless otherwise indicated.
1. Spacing of poles and footing design of fence with windscreen materials attached shall be the responsibility of the Contractor. All chain link fence members with windscreen and foundations are to be designed for a uniform wind pressure or suction of not less than 11.5 PSF applied over the gross area of the screen. Locations and heights are as shown on the drawings.
 2. Locate terminal post at each fence termination and change in horizontal or vertical direction of 10° or more. Terminal, Corner and Pull posts are to extend 12" above the top of the wire mesh to accommodate termination of barbed wire.
 3. Locate pull posts at maximum intervals of 500'.
 4. Concrete shall have a minimum 28 day compressive strength of 2,500 psi. The concrete shall be one continuous pour (no cold joints or adding any additional concrete material) with no gaps between concrete and post. The concrete shall be crowned above the surrounding ground surface to shed water. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement and finishing operations.
- E. Bracing: Double Brace corner, terminal and pull posts by providing horizontal brace rails at 2/3-height of the mesh and 45° angled brace rails installed on each side of the post as applicable and flush with post on fabric side using rail ends and special offset fittings where necessary. Install diagonal truss rods and tightener between terminal post and horizontal brace as a tension. Adjust truss rod, ensuring posts remain plumb.

- F. Barbed wire supporting arms: Installed angled outward from the protected area, at forty-five (45) degrees. If razor ribbon is specified, the top guard shall then be angled inward, toward the protected area.
- G. Tension wire: Provide tension wire at top and bottom of fabric. Install tension wire before stretching fabric and attach to each post with ties. Tension wire at top is to be installed through the barb wire extension arms opening in caps.
- H. Fabric: Do not stretch fabric until concrete foundation has adequately cured. Install fabric on threat side of fence, Pull fabric taut between terminal posts and anchor to framework so that fabric remains in tension after pulling force is released. Attach fabric with wire ties to line posts at 15" oc and to braces and tension wire at 24" oc. All fabric shall have a maximum of 2 inches between finish grade and bottom selvage. If the fence crosses uneven grounds, streams, culverts or other similar conditions, these areas should be protected with additional fence fabric or grating to deter penetration but should not disrupt the flow of water.
- I. Tension or Stretcher Bars: Thread through or clamp to fabric 4 inches oc, and secure to end, corner, pull, and gate posts with tension bands spaced not over 15 inches oc.
- J. Fasteners: Install nuts for tension bands and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.
- K. Tie Wires: Use U-shaped wire of proper length to secure fabric firmly to posts and rails with ends twisted at least 2 full turns. Bend ends of wire to minimize hazard to persons or clothing.
- L. Barbed wire: Shall be pulled taut and attach in clips or slots of each supporting arm. Splicing of barbed wire between the arms is not permitted. Only top and bottom barbed wires are required if employing razor ribbon.
- M. Razor Ribbon: If specified, Stainless Steel General Purpose Barbed Tape Obstacle (GPBTO) razor ribbon coil is to be attached onto the outside (threat side) of the barbed wire top guard with a loop separation of between ten and twelve (10-12) inches and a loop diameter of 18 inches using stainless steel clips capable of withstanding a minimum pull load of 200 pounds for a minimum of 30 seconds without separation or other damage
- N. Gates: Install gates plumb, level, and secure for full opening without

interference. No open gap between fence members, gate assembly and ground should exceed 2". Install ground-set items in concrete for anchorage. Adjust hardware to smooth operation and lubricate where necessary.

END OF SECTION

SECTION 02901

MISCELLANEOUS WORK AND CLEANUP

PART 1: GENERAL

1.01 SCOPE OF WORK

- A Furnish all labor, materials, equipment and incidentals required perform miscellaneous work not specified in other sections but obviously necessary for the proper completion of the work as shown on the Drawings.
- B When applicable the CONTRACTOR shall perform the work in accordance with other sections of this Specification. When no applicable specification exists, the CONTRACTOR shall perform the work in accordance with the best management practice and/or as directed by the OWNER.
- C The work of this Section includes, but is not limited to, the following:
 - 1. Uninterrupted dust suppression
 - 2. Maintenance of facility entrances and internal access roads
 - 3. Traffic control at the facility entrance and internally to include signage, informational and directional
 - 4. Crossing, re-locating and marking existing utilities
 - 5. Maintain the project area free and clean of waste material
 - 6. Removal and disposal of waste material
 - 7. Protection and/or removal and reinstallation of signs
 - 8. Protection and bracing of utility poles
 - 9. Restoring easement and right-of-ways
 - 10. Temporary facilities and removal
 - 11. Removal of existing and temporary piping and structures
 - 12. Other incidental work

PART 2: PRODUCTS

2.01 MATERIALS

- A Materials required for this Section shall be the same quality of materials that are to be restored. Where possible and accepted by the OWNER, the CONTRACTOR may re-use existing materials that are removed.

PART 3: EXECUTION

3.01 CROSSING AND RELOCATING EXISTING UTILITIES

- A This Item includes any extra work required in crossing culverts, water courses, including brooks and drainage ditches, storm drains, gas mains, water mains, electric, telephone, gas and water services and other utilities. This work shall include but is not limited to the following: bracing, hand excavation and backfill and any other work required for crossing the utility or obstruction not included for payment in other items of this specification.
- B In locations where existing utilities cannot be crossed without interfering with the construction of the work as shown on the Drawings, the CONTRACTOR shall remove and relocate the utility as directed by the OWNER or coordinate relocation with Utility Companies of their own utility.
- C At pipe crossings and where designated by the OWNER, the CONTRACTOR shall furnish and place screened gravel bedding so that the existing utility or pipe is firmly supported for its entire exposed length. The bedding shall extend to the mid-diameter of the pipe crossed. Locations for bedding material shall be reviewed and securing adequate materials is the responsibility of the CONTRACTOR.

3.02 CLEANING UP DURING CONSTRUCTION

- A Perform frequent cleaning to keep the Work area, field office area, entrances, internal access roads, traffic areas and adjacent properties free of waste materials, rubbish and windblown debris, resulting from construction operations.
- B Provide on-site containers for the collection of waste materials, debris and rubbish.
- C Regularly remove waste materials, debris and rubbish from the site periodically and dispose at an approved facility.

3.03 FINAL CLEANING

- A The CONTRACTOR shall remove all construction material, excess excavation, buildings, equipment and other debris remaining on the job as a result of construction operations and shall restore the site of the work to a neat and orderly condition in an reasonable and acceptable time period following construction.
- B Prior to final completion, OWNER shall conduct an inspection of all work areas to verify that the entire work area is clean.

3.04 INCIDENTAL WORK

- A Do all incidental work not otherwise specified, but obviously necessary to the proper completion of the Contract as specified and as shown on the Drawings.

3.05 TEMPORARY FACILITIES

- A The CONTRACTOR shall furnish, install, maintain and remove all temporary facilities required for construction or called for in the Contract Documents

END OF SECTION

SECTION 03301
CONCRETE AND REINFORCING STEEL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install all concrete work complete as shown on the Drawings and as specified herein.
- B. Furnish, as required to establish concrete mixes, all sampling and laboratory testing of products and materials performed by an independent testing laboratory engaged by and at the expense of the Contractor. Provide field sampling, testing, inspection and related laboratory tests.

1.02 RELATED WORK

- A. Section 10880 – Truck Scale.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01340, shop drawings and product data for:
 - 1. Placing drawings and bar bending details in conformity with the recommendations of ACI 315.
 - 2. Technical data on all materials and components.
 - 3. Material Safety Data Sheets (MSDS) for all concrete admixtures and curing agents.
- B. Test Reports
 - 1. Sieve analysis, mechanical properties and deleterious substance content for fine and coarse aggregates.
 - 2. Concrete mixes: For each formulation of concrete proposed for use, submit constituent quantities per cubic yard, water cementitious ratio, concrete slump, type and manufacturer of cement. Provide either a. or b., below, for each mix proposed.
 - a. Standard deviation data for concrete mixes based on statistical records.
 - b. Water cementitious ratio curve for concrete mixes based on laboratory tests. Provide average cylinder strength test results at 7 and 28 days for laboratory concrete mix designs. Provide results of 14 day tests if available.
- C. Certifications
 - 1. Certify that admixtures used in the same concrete mix are compatible with

each other and the aggregates.

2. Certificate of conformance for concrete production facilities from NRMCA.

1.04 REFERENCE STANDARDS

A. ASTM International

1. ASTM A82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
2. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
3. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
4. ASTM C33 - Standard Specification for Concrete Aggregates.
5. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
6. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
7. ASTM C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete
8. ASTM C150 - Standard Specification for Portland Cement
9. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
10. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
11. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
12. ASTM C311 - Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland-Cement Concrete.
13. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.

B. American Concrete Institute (ACI).

1. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.

2. ACI 232.2R - Use of Fly Ash in Concrete
3. ACI 301 - Specification for Structural Concrete.
4. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete.
5. ACI 305R - Hot Weather Concreting.
6. ACI 306R - Cold Weather Concreting.
7. ACI 315 - Details and Detailing of Concrete Reinforcement.
8. ACI 318 - Building Code Requirements for Structural Concrete.

C. Concrete Reinforcing Steel Institute (CRSI)

1. MSP - Manual of Standard Practice

D. National Ready Mixed Concrete Association (NRMCA)

1. Quality Control Manual, Section 3- Certification of Ready Mixed Concrete Production Facilities.

E. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

- A. Comply with ACI 318 and other stated specifications, codes and standards. Apply the most stringent requirements of stated specifications, codes, standards, and this Section when conflicts exist.
- B. If, during the progress of the work, it is impossible to secure concrete of the specified workability and strength with the materials being furnished, the Engineer may order such changes in proportions or materials, or both, as may be necessary to secure the specified properties. Make all changes so ordered at the no additional cost to the Owner.
- C. Develop concrete mixes and their testing by an independent testing laboratory engaged by and at the expense of the Contractor. Methods of testing shall comply with the latest applicable ASTM methods.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Ship and store reinforcing steel with bars of the same size and shape fastened in bundles with durable tags, marked in a legible manner with waterproof markings showing the same designations as those shown on the submitted placement drawings. Provide reinforcing steel free from mill scale, loose rust, mud, dirt, grease, oil, ice or other foreign matter. Store off the

ground, protect from moisture and keep free from rust, mud, dirt, grease, oil, ice or other injurious contaminants.

- B. Store products in conformity with the manufacturer's recommendations.
- C. Store or stockpile sand, aggregates, cement and fly ash in conformity with ACI 301.

PART 2 PRODUCTS

2.01 GENERAL

- A. The use of manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.
- B. Like items of materials shall be the end products of one manufacturer in order to provide standardization for appearance, maintenance and manufacturer's service.
- C. Materials shall comply with this Section and any applicable State or local requirements.

2.02 MATERIALS

- A. Cement: Domestic portland cement conforming to ASTM C150. Do not use air entraining cements. The allowable types of cement for each class of concrete are shown in Table 1.
 - B. Fine Aggregate: Washed inert natural sand conforming to ASTM C33.
 - C. Coarse Aggregate: Well-graded crushed stone or washed gravel conforming to ASTM C33, size 57. Limits of deleterious substances and physical property requirements as listed in ASTM C33, Table 4 for severe weathering regions.
 - D. Water: Potable water free of oil, acid, alkali, salts, chlorides, (except those attributable to drinking water) organic matter, or other deleterious substances.
 - E. Admixtures: Use admixtures free of chlorides and alkalis (except for those attributable to drinking water). The admixtures shall be from the same manufacturer when it is required to use more than one admixture in the same concrete mix. Use admixtures compatible with the concrete mix including other admixtures and made for use in contact with potable water after 30 days of concrete curing.
- 1. Air Entraining Admixture: Conforming to ASTM C260. Proportion and mix in accordance with manufacturer's recommendations.

2. Water Reducing Admixture: Conforming to ASTM C494, Type A. Proportion and mix in accordance with manufacturer's recommendations.
 3. Do not use admixtures causing retarded or accelerated setting of concrete without written approval from the Engineer. Use retarding or accelerating water reducing admixtures when so approved.
- F. Fly Ash: Class F fly ash complying with ASTM C618, including the requirements of Table 1 but with the Loss of Ignition (LOI) limited to 3 percent maximum and the optional physical requirements of Table 3.
- G. Deformed Concrete Reinforcing Bars: ASTM A615, Grade 60 deformed bars.
- H. Welded Steel Wire Fabric: ASTM A185.
- I. Welded Deformed Steel Wire Fabric: ASTM A497.
- J. Reinforcing Steel Accessories
1. Plastic Protected Wire Bar Supports: CRSI Bar Supports, Class 1 - Maximum Protection.
 2. Stainless Steel Protected Wire Bar Supports: CRSI Bar Supports, Class 2 - Moderate Protection with legs made wholly from stainless steel wire.
 3. Precast Concrete Bar Supports: CRSI Bar Supports, Precast Concrete Bar Supports. Precast concrete blocks that have equal or greater strength than the surrounding concrete.
- K. Tie Wires for reinforcement: 16 gauge or heavier black annealed wire.
- L. Sheet Curing Materials: Waterproof paper, polyethylene film or white burlap-polyethylene sheeting, all conforming to ASTM C171.

2.03 MIXES

- A. Select proportions of ingredients to meet the design strength and materials limits specified in Table 1 and to produce placeable, durable concrete conforming to these Specifications. Proportion ingredients to produce a homogenous mixture which will readily work into corners and angles of forms and around reinforcement without permitting materials to segregate or allowing free water to collect on the surface.
- B. Base concrete mixes on standard deviation data of prior mixes with essentially the same proportions of the same constituents or, if not available, develop concrete mixes by laboratory tests using the materials proposed for the work.
- C. Compression Tests: Provide testing of the proposed concrete mix or mixes

to demonstrate compliance with the compression strength requirements in conformity with the provisions of ACI 318.

- D. Entrained air, as measured by ASTM C231, shall be as shown in Table 1.
- E. Slump of the concrete as measured by ASTM C143, shall be as shown in Table 1.
- F. Proportion admixtures according to the manufacturer's recommendations. Two or more admixtures specified may be used in the same mix provided that the admixtures in combination retain full efficiency and have no deleterious effect on the concrete or on the properties of the other admixture(s).

TABLE 1

Design Class ¹	Strength	Cement ²	Fine Aggregate ³	Coarse Aggregate ³	Cementitious Content ⁴	
D2	4000	Type II	Sand	57	560	
Class	W/C Ratio ⁵	Fly Ash ⁶	AE Range ⁷	WR ⁸	HRWR ⁹	Slump Range
						Inches
D2	0.44 max.	Yes	3.5 to 5	Yes	No	3-5

TABLE NOTES:

1. Minimum compressive strength in psi at 28 days
2. ASTM designation in ASTM C150
3. Size Number in ASTM C33
4. Minimum cementitious content in lbs per cubic yard (where fly ash is used cementitious content is defined as cement content plus fly ash content)
5. W/C is Maximum Water Cementitious ratio by weight
6. Fly ash content in the range of 20-25 percent of the total cement content plus fly ash content, by weight.
7. AE is percent air entrainment
8. WR is water reducing admixture
9. HRWR is high-range water-reducing admixture

2.04 MEASURING, BATCHING, MIXING AND TRANSPORTING CONCRETE

- A. Measure, batch, mix and transport concrete in conformance with ASTM C94 and the requirements herein or as otherwise approved in writing by the Engineer.
- B. Ready-mixed concrete, whether produced by a concrete supplier or the

Contractor shall conform to the requirements above. Do not hand mix.

- C. Dispense admixtures into the batch in conformity with the recommendations of the admixture manufacturer.
- D. Mix concrete until there is uniform distribution of the materials and discharge completely before the mixer is recharged. The mixer shall be rotated at a speed recommended by the mixer manufacturer and mixing shall be continued for at least 1-1/2 minutes after all the materials are in the mixer. Place concrete within 1-1/2 hours of the time at which water was first added, otherwise it will be rejected. Concrete which has been remixed or retempered, or to which an excess amount of water has been added, will also be rejected.

2.05 FORMWORK

A. Forms

- 1. Make forms for cast-in-place concrete of wood, steel or other approved materials. Construct wood forms of sound lumber or plywood free from knotholes and loose knots. Construct steel forms to produce surfaces equivalent in smoothness and appearance to those produced by new plywood panels. Design and construct all forms to provide a flat, uniform concrete surface requiring no grinding, repairs, or finishing except as specified herein.
- 2. Provide rigid forms that will not deflect, move, or leak. Design forms to withstand the high hydraulic pressures resulting from rapid filling of the forms and heavy high frequency vibration of the concrete. Limit deflection to 1/400 of each component span. Lay out form joints in a uniform pattern.
- 3. Dress and match boards. Sand plywood smooth and fit adjacent panels with tight joints. Tape, gasket, plug, and/or caulk all joints and gaps in forms to provide watertight joints that will withstand placing pressures without exceeding specified deflection limit or creating surface patterns.
- 4. Provide 3/4-inch chamfer on all corners unless otherwise indicated.

- B. Form Release Agent. Coat all form surfaces in contact with concrete with an effective, non- staining, non-residual, water based, bond-breaking form coating unless otherwise indicated or specified.

C. Form Ties

- 1. Coil and Wire Ties: Provide ties manufactured so that, after removal of the projecting part, no metal remains within 1-1/2-in of the face of the concrete. The part of the tie to be removed shall be at least 1/2-in diameter or be provided with a plastic or wooden cone at least 1/2-in diameter and 1-1/2-in long. Provide cone washer type form ties in concrete exposed to view.

2. Flat Bar Ties for Panel Forms: Provide ties that have plastic or rubber inserts with a minimum depth of 1-1/2-in and manufactured to permit patching of the tie hole.
3. Do not use common wire for form ties.

2.06 JOINT ACCESSORIES

A. Sealant

1. Provide sealant for joints in horizontal surfaces conforming to ASTM C920, Type S or M, Grade P or NS, Class 25. Provide sealant for joints in sloping and vertical surfaces conforming to ASTM C920, Type S or M, Grade NS, Class 25. Provide Use T sealant in pedestrian and vehicular traffic areas.

PART 3 EXECUTION

3.01 FORMWORK

- A. Provide forms for all cast-in-place concrete. Construct and place forms to provide concrete of the shape, lines, dimensions and appearance indicated.
- B. Provide removable panels at the bottom of forms for walls and columns to allow cleaning, inspection and joint surface preparation. Provide closable intermediate inspection ports in forms for walls. Provide tremies and hoppers for placing concrete and to allow concrete sampling, prevent segregation and prevent the accumulation of hardened concrete on the forms and reinforcement above the fresh concrete.
- C. Provide rigid forms to withstand construction loads and vibration and meeting specified deflection limits and tolerances. Construct forms so that the concrete will not be damaged by form removal.
- D. Accessories which remain embedded in the concrete after formwork removal will be subject to the approval of the Engineer. Permanent embedments shall have sufficient concrete cover or be of suitable materials for the exposure condition as approved by the Engineer. Remove unsatisfactory embedded items at no additional cost to the Owner.
- E. Clean, repair, remove projecting nails and fill holes, and smooth protrusions on all form surfaces to be in contact with concrete before reuse. Do not reuse forms for exposed concrete unless a "like new" condition of the form is maintained that will produce surfaces equivalent in smoothness and appearance to those produced by new plywood panels.
- F. Coat wood forms in contact with concrete using form release agent prior to form installation.
- G. Clean steel forms by sandblasting or other method to remove mill scale and other ferrous deposits from the contact surface of all forms. Coat steel forms

in contact with concrete using form release agent prior to form installation.

3.02 CONSTRUCTION JOINTS

- A. Locate construction joints where indicated or where approved by the Engineer.
- B. Continue all reinforcing steel through the joint.
- C. At construction joints and at concrete joints indicated to be "roughened", uniformly roughen the surface of the concrete to a full amplitude (distance between high and low points and side to side) of 1/4-in with chipping tools to expose a fresh face. Thoroughly clean joint surfaces of loose or weakened materials by waterblasting or sandblasting and prepare for bonding. At least two hours before and again shortly before the new concrete is deposited, saturate the joints with water. After glistening water disappears, coat joints with neat cement slurry mixed to the consistency of very heavy paste. The surfaces shall receive a coating at least 1/8-in thick, scrubbed-in by means of stiff bristle brushes. Deposit new concrete before the neat cement dries.

3.03 REINFORCING STEEL

- A. Fabricate reinforcing steel accurately to the dimensions shown. Bend bars around a revolving collar having a diameter of not less than that recommended in ACI 318. All bars shall be bent cold.
- B. Determine clear concrete cover based on exposure to the environment. Unless indicated otherwise on the Drawings, provide the following minimum clear concrete cover over reinforcement:
 - 1. Concrete cast against and permanently exposed to earth: 3-in
 - 2. Concrete exposed to soil, water, sewage, sludge and/or weather:
 - a. Slabs (top and bottom cover), walls: 2-in
 - b. Beams and columns (ties, spirals and stirrups): 2-in
 - 3. Concrete not exposed to soil, water, sewage, sludge and/or weather:
 - a. Slabs (top and bottom cover), walls, joists, shells and folded plate members: 1-in
 - b. Beams and columns (ties, spirals and stirrups): 1-1/2-in
- C. Provide tension lap splices in compliance with ACI 318. Stagger splices in adjacent bars where possible. Provide Class B tension lap splices at all locations unless otherwise indicated.
- D. Lap splices in welded wire fabric in accordance with the requirements of ACI 318 but not less than 12-in. Tie the spliced fabrics together with wire ties spaced not more than 24-in on center and lace with wire of the same diameter as the welded wire fabric. Offset splices in adjacent widths to prevent continuous splices.

- E. Use precast concrete blocks where the reinforcing steel is to be supported over soil. Use plastic protected bar supports or steel supports with plastic tips where the reinforcing steel is to be supported on forms for a concrete surface that will be exposed to weather, high humidity, or liquid. Use stainless steel supports or plastic tipped metal supports in all other locations unless otherwise noted on the Drawings or specified herein.
- F. Before placing in position, clean reinforcement of loose mill scale and rust, mud, dirt, grease, oil and other coatings, including ice that reduce or destroy bond. When there is a delay in depositing concrete after the reinforcement is in place, bars shall be reinspected and cleaned again when necessary.
- G. Coat reinforcement which is to be exposed for a considerable length of time after being placed with a heavy coat of cement grout.
- H. Reinforcing steel interfering with the location of other reinforcing steel, piping, conduits or embedded items may be moved within the specified tolerances or one bar diameter, whichever is greater. Obtain the approval of the Engineer if greater displacement of bars to avoid interference is needed. Do not cut reinforcement to install inserts, conduits, mechanical openings or other items without the prior approval of the Engineer.
- I. Secure, support and tie reinforcing steel to prevent movement during concrete placement. Secure dowels in place before placing concrete
- J. Do not cover any reinforcing steel with concrete until the amount and position of the reinforcement has been checked and the Engineer has given permission to proceed.

3.04 INSPECTION AND COORDINATION

- A. Batching, mixing, transporting, placing and curing of concrete shall be subject to the inspection of the Engineer at all times. Advise the Engineer of readiness to proceed at least six working hours prior to each concrete placement. The Engineer will inspect the preparations for concreting including the preparation of previously placed concrete, the reinforcing and the alignment, cleanliness and tightness of formwork. Do not place concrete without the inspection and acceptance of the Engineer.

3.05 CONCRETE APPEARANCE

- A. Remix concrete showing either poor cohesion or poor coating of the coarse aggregate with paste. If this does not correct the condition, the concrete shall be rejected.
- B. Provide concrete having a homogeneous structure which, when hardened, will have the specified strength, durability and appearance. Provide mixtures and workmanship such that concrete surfaces, when exposed, will require no finishing except as specified herein.

3.06 PLACING AND COMPACTING

- A. Do not place concrete until forms, condition of subgrade and method of placement have been approved by the Engineer. Remove all debris, foreign matter, dirt, ice and standing water from the forms before depositing concrete. Do not place concrete on frozen subgrade, snow or ice. The contact surface between concrete previously placed and new concrete shall be cleaned and brushed with cement paste. Concrete, except as indicated on the Drawings, shall not be placed in water or submerged within 24 hours after placing, nor shall running water be permitted to flow over the surface of fresh concrete within 4 days after its placing.
- B. Deposit concrete as near its final position as possible to prevent segregation due to rehandling or flowing. Pumping of concrete will be permitted when an approved design mix and aggregate sizes suitable for pumping are used. Do not deposit concrete which has partially hardened or which has been contaminated by foreign materials. If the section cannot be placed continuously, place construction joints as specified or as approved. Place concrete for walls using tremie tubes in 12-in to 24-in lifts, keeping the surface horizontal. Do not drop concrete more than 4-ft.
- C. Use high frequency mechanical vibrators to obtain proper consolidation of the concrete. Do not use vibrators to move or transport concrete in the forms. Do not over-vibrate so as to segregate. Continue vibration until the frequency returns to normal, trapped air ceases to rise and the surface appears liquefied, flattened and glistening. Use spades, rods or forks so that concrete is completely worked around reinforcement, embedded items, pipe stubs, and openings and into corners of forms.

3.07 CURING AND PROTECTION

- A. Protect all concrete work against injury from the elements and defacements of any nature during construction operations.
- B. Cure all concrete in conformance with ACI 301. Concrete that is to be used for the containment of water shall be water cured. Water curing shall be by ponding, by continuous sprinkling or by covering with continuously saturated burlap. Other concrete shall be cured by either water curing, sheet material curing or liquid membrane curing compound except that liquid membrane curing compound shall not be used on any concrete surface where additional concrete is to be placed or where the concrete surface is to be coated or painted.
- C. Protect finished surfaces and slabs from the direct rays of the sun to prevent checking and crazing.
- D. During cold weather concrete shall be batched, delivered, placed, cured and protected in compliance with the recommendations of ACI 306R. Do not use salt, manure or other chemicals for cold weather protection.

- E. During hot weather concrete shall be batched, delivered, placed, cured and protected in compliance with the recommendations of ACI 305R. The temperature of the concrete shall be such that it will cause no difficulties from loss of slump, flash set or cold joints. Immediately cover plastic concrete with sheet curing material during hot weather.

3.08 FIELD TESTS

- A. Sets of field control cylinder specimens shall be taken by Contractor's testing laboratory inspector during the progress of the work, in compliance with ASTM C31. The number of sets of concrete test cylinders taken of each class of concrete placed each day will not be less than one set per day, nor less than one set for each 150 cu yds of concrete nor less than one set for each 5,000 sq ft of surface area for slabs or walls. Specimens will be formed in 6-in diameter by 12-in long non-absorbent cylindrical molds.
 - 1. A "set" of test cylinders shall consist of four cylinders: one to be tested at seven days and two to be tested and their strengths averaged at 28 days. The fourth may be used for a special test at 3 days or to verify strength after 28 days if 28-day test results are low.
 - 2. When the average 28-day compressive strength of the cylinders in any set falls below the required compressive strength or below proportional minimum seven-day strengths (where proper relation between seven and 28 day strengths have been established by tests), change proportions, cementitious content, or temperature conditions to achieve the required strengths at no additional cost to the Owner.
- B. Cooperate in the making of tests by allowing free access to the work for the selection of samples. Provide an insulated closed curing box for the specimens and protect the specimens against injury or loss through construction operations until shipment to the testing lab.
- C. Slump tests shall be made in the field by the Contractor's testing laboratory inspector immediately prior to placing the concrete. Such tests will be made in accordance with ASTM C143. When concrete is pumped, slump will be determined at point of truck discharge. If the slump is outside the specified range, the concrete will be rejected.
- D. Test for air content shall be made by the Contractor's testing laboratory inspector on a fresh concrete sample. Air content for concrete made of ordinary aggregates having low absorption shall be made in compliance with either the pressure method complying with ASTM C231 or by the volumetric method complying with ASTM C173. If aggregates with high absorptions are used, the latter test method shall be used. When concrete is pumped, air content will be determined at point of placement.

3.09 STRIPPING AND FINISHING CONCRETE

- A. Tops of foundation slabs shall have wood float finish.
- B. Do not remove forms before the concrete has attained a strength of at least 30 percent of the specified design strength nor before reaching approximately "100 day-degrees" of moist curing (whichever is the longer). Degree-days are defined as the total number of 24 hour periods multiplied by the weighted average daily air temperature at the surface of the concrete (e.g., 7 days at an average 50 degrees F = 350 degree-days).
- C. Exercise care to prevent damaging edges or obliterating the lines of chamfers, rustications or corners when removing the forms or doing any other work adjacent thereto.
- D. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete, to the satisfaction of the Engineer.
- E. Immediately after removal of forms remove tie cones and metal portions of ties. Fill holes promptly upon stripping as follows: Moisten the hole with water, followed by a 1/16-in brush coat of neat cement slurry mixed to the consistency of a heavy paste. Immediately plug the hole with a 1 to 1.5 mixture of cement and concrete sand mixed slightly damp to the touch (just short of "balling"). Hammer the grout into the hole until dense, and an excess of paste appears on the surface in the form of a spider web. Trowel smooth with heavy pressure. Avoid burnishing.
- F. Defective concrete and honeycombed areas: Chip down square and at least 1-in deep to sound concrete with hand chisels or pneumatic chipping hammers. Irregular voids or surface stones need not be removed if they are sound, free of laitance, and firmly embedded in the parent concrete. If honeycomb exists around reinforcement, chip to provide a clear space at least 3/8-in wide all around the steel. For areas less than 1-1/2-in deep, the patch may be made in the same manner as described above for filling form tie holes, care being exercised to use adequately dry

(non-trowelable) mixtures and to avoid sagging. Thicker repairs will require build-up in successive 1-1/2-in layers on successive days, each layer being applied (with slurry, etc.) as described above.

- G. Concrete not exposed in the finished work shall have off-form finish with fins and other projections removed and tie cones and defects filled as specified above.

3.10 SCHEDULE

- A. The following (Table 2) are the general applications for the various concrete design strengths to be used:

TABLE 2

Class	Design Strength (psi)	Description
D2	4,000	Structural concrete greater than 10-in in thickness including walls, slabs on grade and all other structural concrete greater than 10-in in thickness.

END OF SECTION

SECTION 09901
SURFACE PREPARATION AND SHOP PRIME PAINTING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required for the surface preparation and application of shop primers on ferrous metals, excluding stainless steels, as specified herein.

1.02 RELATED WORK

- A. Finish painting is included in Section 09902.
- B. Truck Scale is included in Section 10880.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01340, shop drawings, manufacturer's specifications and data on the proposed primers and detailed surface preparation, application procedures and dry mil thicknesses.
- B. Submit representative physical samples of the proposed primers, if required by the Engineer.

1.04 REFERENCE STANDARDS

- A. The Society for Protective Coatings (SSPC)
 - 1. SSPC-SP 6/NACE No. 3 - Joint Surface Preparation Standard SSPC-SP 6/NACE No. 3: Commercial Blast Cleaning
 - 2. SSPC-SP 10/NACE No. 2 - Joint Surface Preparation Standard SSPC-SP 10/NACE No. 2: Near-White Blast Cleaning.
- B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Shop primer for ferrous metals shall be shop primed with the following unless manufacturer requirements differ, then manufacturer requirements shall govern:
 - 1. Shop Prime Coat: (Zinc Micaceous Iron Oxide Polyurethane Aromatic Shop Primer)

- a. TNEMEC: Series 1 Omnithane
- b. Carboline: Carboguard 561
- c. Sherwin-Williams Company (The): Corothane I Zinc Primer 1K Mio-Zinc.
- d. PPG PMC Durathane MCZ 97-679 Series or PPG PMC Amerlock 400.
- e. Or equal.

B. Non-Primed Surfaces - Gears, bearings surfaces and other similar surfaces obviously not to be painted shall be given a heavy shop coat of grease or other suitable rust-resistant coating. This coating shall be maintained as necessary to prevent corrosion during all periods of storage and erection and shall be satisfactory to the Engineer.

- C. Compatibility of Coating Systems - Shop priming shall be done with primers that are guaranteed by the manufacturer to be compatible with their corresponding primers and finish coats specified in Section 09902 for use in the field and which are recommended for use together.

PART 3 EXECUTION

3.01 APPLICATION

A. Surface Preparation and Priming

- 1. Non-submerged components scheduled for priming shall be blast cleaned in accordance with SSPC-SP 6/NACE No. 3, immediately prior to priming. Submerged components scheduled for priming shall be blast cleaned in accordance with SSPC-SP 10/NACE No. 2, immediately prior to priming. Consult manufacturer regarding required surface profiles.
- 2. Surfaces shall be dry and free of dust, oil, grease and other foreign material before priming.
- 3. Shop prime in accordance with approved manufacturer's recommendations.

B. Non-Primed Surfaces

- 1. Apply approved coating per manufacturer's recommendations.

3.02 FABRICATED ITEMS

- A. All items to be shop primed shall be blast cleaned as specified for applicable service prior to priming. If, in the opinion of the Engineer, any prime coating that has been improperly applied or if material contrary to this Section has been used, that coating shall be removed by abrasive blasting to white metal and reprimed in accordance with this Section.
- B. All shop prime coats shall be of the correct materials and applied in accordance with this Section. Remove prime coats not in accordance with this Section by blast cleaning and apply the specified prime coat at no

additional cost to the Owner.

- C. Shop primed surfaces shall be cleaned thoroughly and damaged or bare spots prepared as approved and retouched with the specified primer before the application of successive paint coats in the field.
- D. Shop finish coats, if proposed and allowed, shall be equal in appearance and protection quality to a field applied finish coat. If, in the opinion of the Engineer, a shop finish coat system does not give the appearance and protection quality of other work of similar nature, prepare the surfaces and apply the coat or coats of paint as directed by the Engineer to accomplish the desired appearance and protection quality. Submit to the Engineer substantial evidence that the standard finish is compatible with the specified finish coat.
- E. Properly protect the shop prime and finish coats against damage from weather or any other cause.
- F. Wherever fabricated equipment is required to be blast cleaned, protect all motors, drives, bearings, gears, etc, from the entry of grit. Equipment found to contain grit shall be promptly and thoroughly cleaned.

END OF SECTION

SECTION 09902
PAINTING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install all painting complete as shown on the Drawings and as specified herein.
- B. It is the intent of this Section to paint all exposed structural and miscellaneous steel; tanks and systems; mechanical and electrical equipment; conveying systems, pipe, fittings and valves; electrical conduit and appurtenances; all as specified in the attached painting schedules and all other work obviously required to be painted unless otherwise specified. Minor items not mentioned in the schedule of work shall be included in the work of this Section where they come within the general intent of this Section as stated herein.
- C. Aluminized steel - Paint with silicone aluminum as specified. Other aluminum-paint only where noted (as is specified). Paint items so noted in Paragraph 1.01B and in accordance with the Painting Schedule. Provide vinyl film letters and numbers for markings as specified. Items noted in other Specification Sections as having factory finish and other factory finished items are obviously not field painted. The Contractor is responsible for having damaged factory finish painted items repaired or, if so ordered, for replacing items. The various Sections are responsible, as stated in each, for preparation and field touch-up of abrasions, welds and damaged primed areas of primed or galvanized components after erection.
- D. The following items will not be painted:
 - 1. Concrete except where specified above and scheduled to be painted and seamless flooring.
 - 2. Stainless steel louvers, doors and frames.
 - 3. Finish hardware.
 - 4. Non-ferrous metals and stainless steel, unless specifically noted otherwise.
 - 5. Factory pre-finished architectural components.
 - 6. Packing glands and other adjustable parts and name plates of mechanical equipment.
 - 7. Plumbing fixtures.

1.02 RELATED WORK

- A. Shop priming and surface preparation are specified in Section 09901.
- B. Truck Scale as specified in Section 10880.

1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01340.
- B. Product Data: For each type of product indicated.
- C. Samples: Submit the following for each type of coating system and in each color and gloss of finish coat indicated.
 - 1. Color cards for initial color selections.
 - 2. Three sets of 8-in by 8-in samples, on 1/4-in hardboard, of all colors required for all types of paint. Resubmit until approved.

1.04 REFERENCE STANDARDS

- A. Steel Structures Painting Council (SSPC)
 - 1. SSPC SP-1 - Surface Preparation Specification No. 1 Solvent Cleaning.
 - 2. SSPC SP-2 - Surface Preparation Specification No. 2 Hand Tool Cleaning.
- B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.06 PROJECT CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F.
- B. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.07 EXTRA MATERIALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
 - 1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. of each material and color applied.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Provide products by one of the following:
 - 1. Tnemec, Inc.(TN);
 - 2. The Sherwin Williams Company (SW)
 - 3. PPG Architectural Finishes, Inc. (PPG)
 - 4. PPG Architectural Finishes, Inc. Ameron (AME)
 - 5. Or equal.

2.02 MATERIALS

- A. Material Compatibility:
 - 1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. Provide products of same manufacturer for each coat in a coating system.
- B. All painting materials shall be delivered to the work site in unbroken packages, bearing the manufacturer's brand and name. They shall be used without adulteration and mixed, thinned and applied in strict accordance with manufacturer's directions for the applicable materials and surface and with the Engineer's approval before using.
- C. Shop priming shall be done with primers that are guaranteed by the manufacturer to be compatible with the finish paints to be used. Refer to Section 09901 for special primers.
- D. Work areas will be designated by the Engineer for storage and mixing of all painting materials. Materials shall be in full compliance with the requirements

of pertinent codes and fire regulations. Proper containers outside of the buildings shall be provided and used for painting wastes and no plumbing fixture shall be used for this purpose.

- E. Colors: As selected by the Contractor and approved by the Engineer from manufacturer's full range. Engineer shall reserve the right to select the color from the manufacturer's full range if not satisfied with the Contractor's selection.

2.03 COLOR CODING FOR PIPES AND EQUIPMENT

- A. All pipes and equipment shall be painted with final coat color as described in Section 2.02E.
- B. All pipe supports shall be painted black. Hanger rods and hanger rod connections to building structure shall be painted to match the color of the wall or ceiling to which it is attached.

2.04 LETTERING OF TITLES

- A. The name of the materials in each pipeline and alongside this an arrow indicating the direction of flow of fluids, shall be indicated on each pipe system. Titles shall not be located more than 26 linear feet apart and shall also appear directly adjacent to each side of any wall the pipeline breaches, adjacent to each side of the valve regulator, flowcheck, strainer cleanout and all pieces of equipment.
- B. Titles shall identify the contents by complete name at least once in each space through which it passes and thereafter by generally recognized abbreviations, letters or numerals as approved. Identification title locations shall be determined by the Engineer but in general they shall be placed where the view is unobstructed and on the two lower quarters of pipe or covering where they are overhead. Title should be clearly visible from operating positions especially those adjacent to control valves.
- C. Numbers and letters shall be die-cut from 3.5 mil vinyl film and pre-spaced on carrier tape. Adhesive and finish surface shall be protected with one piece removable liners. Color shall be white or black as approved depending on substrate color.
- D. Letter size shall be as indicated in the following table:

OUTSIDE DIAMETER OF PIPE OR COVERING	SIZE OF LEGEND LETTERS
3/4-in to 1-1/4-in	1/2-in
1-1/2-in to 2-in	3/4-in

2-1/2-in to 6-in
8-in to 10-in
Over 10-in

1-1/2-in
2-1/2-in
3-in

- E. The system for preparation and application of letters shall be Type B a.s.i/2 by ASI Sign Systems; Architectural Graphics Inc. or equal. Letter type shall be Optima Bold, upper case. Grid 2 spacing shall be employed. Arrow shall match as approved, letter type and size. The instructions of the manufacturer shall be followed in respect to storage, surface preparation and applications of letters.

2.05 TITLES FOR EQUIPMENT

- A. Titles shall be provided in vinyl film as specified above on all equipment using 1-in high Optima Bold upper case, Grid 2 spacing, white or black in color as approved depending on substrate. Use titles shown on mechanical drawings for bidding purposes. Titles shall be mounted at eye level on machines where possible or at the upper most broad vertical surface of low equipment. Where more than one piece of the equipment item to be titled exists, the items shall be numbered consecutively as indicated on the mechanical drawings or as directed by the Engineer; for example Pump No. 1, Pump No. 2, etc. Titles shall be composed in more than one line if required and justified on the left hand side as approved.

2.06 TESTING EQUIPMENT

- A. Furnish to the Engineer for use on the Project for paint inspection, wet and dry film thickness gauges and all other equipment required by the Engineer for inspection.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content required by manufacturer and other conditions affecting performance of work.
 - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 3. Coating application indicates acceptance of surfaces and conditions.

3.02 PREPARATION

- A. All surfaces to be painted shall be prepared as specified herein and shall be dry and clean before painting.

- B. All metal welds, blisters, etc, shall be ground and sanded smooth. All pits and dents shall be filled and all imperfections shall be corrected so as to provide a smooth surface for painting. All rust, loose scale, oil, tar and asphalt bearing coatings, grease and dirt shall be removed by use of approved solvents, wire brushing, grinding or sanding.
- C. Galvanized, aluminum, and copper surfaces shall have all oxidation and foreign material removed before painting by SSPC SP-1, using an approved V.O.C. compliant method. Galvanized and, when ordered, the other metal surfaces specified above shall be hand tool cleaned to SSPC SP-2 standards to provide a uniform 1 mil surface profile.

3.03 WORKMANSHIP

A. General

1. At the request of the Engineer, sample areas of the finished work prepared in strict accordance with this Section shall be furnished and all painting shall be equal in quality to the approved sample areas. Finished areas shall be adequate for the purpose of determining the quality of workmanship. Experimentation with factory or paint manufacturer's warehouse mixed colors shall be furnished to the satisfaction of the Engineer where standard chart colors are not satisfactory.
2. Protection of furniture and other movable objects, equipment, fittings and accessories shall be provided throughout the painting operation. Canopies of lighting fixtures shall be loosened and removed from contact with surface, covered and protected and reset upon completion. Remove all electric plates, surface hardware, etc, before painting, protect and replace when completed. Mask all machinery name plates and all machined parts not receiving a paint finish. Dripped or spattered paint shall be promptly removed. Lay drop cloths in all areas where painting is being done to adequately protect flooring and other work from all damage during the operation and until the finished job is accepted.
3. On metal surfaces apply each coat of paint at the rate specified by the manufacturer to achieve the minimum dry mil thickness required. If material has thickened or must be diluted for application by spray gun, the coating shall be built up to the same film thickness achieved with undiluted material. One gallon of paint as originally furnished by the manufacturer shall not cover a greater area when applied by spray gun than when applied unthinned by brush. Deficiencies in film thickness shall be corrected by the application of an additional coat(s). On masonry, application rates will vary according to surface texture; however, in no case shall the manufacturer's stated coverage rate be exceeded. On porous surfaces, it shall be the painter's responsibility to achieve a protective and decorative finish either by decreasing the coverage rate or by applying additional coats of paint.

B. Field Priming

1. Steel members, metal castings, mechanical and electrical equipment and other metals which are shop primed before delivery at the site will not require a prime coat on the job. All piping and other bare metals to be painted shall receive one coat of primer before exposure to the weather, and this prime coat shall be the first coat as specified in the painting schedule. Surface preparation of bare metal shall be the responsibility of the Contractor.
2. Equipment which is specified to receive a baked-on enamel finish or other factory finish shall not be field painted unless the finish has been damaged in transit or during installation. Surfaces that have been shop painted and have been damaged, or where the shop coat or coats of paint have deteriorated, shall be properly cleaned and retouched before any successive painting is done on them in the field. All such field painting shall match as nearly as possible the original finish. Preparation and painting shall be provided by the Contractor.
3. Equipment shipped with a protective shop painting coat or coats shall be touched up to the satisfaction of the Engineer with primers as recommended by the manufacturer of the finish paint. Preparation and painting shall be provided by the Contractor.

C. Field Painting

1. All painting at the site shall be under the strict inspection of the Engineer. Only skilled painters and, where dictated by special conditions or systems and so ordered, specialist painters shall be used on the work.
2. All paint shall be at room temperature before applying, and no painting shall be done when the temperature is below 60 degrees F, in dust-laden air, when rain or snow is falling, or until all traces of moisture have completely disappeared from the surface to be painted.
3. Successive coats of paint shall be different shades (from paint manufacturer's stock or shop mixed paint) of the required colors so as to make each coat easily distinguishable from each other with the final undercoat the approximate shade of the finished coat to ensure no show-through as approved.
4. Finish surfaces shall not show brush marks or other irregularities. Undercoats shall be thoroughly and uniformly sanded with the type paper appropriate for the undercoats to remove defects and provide a smooth even surface. Top and bottom edges of doors shall be painted.
5. Painting shall be continuous and shall be accomplished in an orderly

manner so as to facilitate inspection. Materials subject to weather shall be primed coated as quickly as possible. Surfaces of exposed members that will be inaccessible after erection shall be cleaned and painted before erection.

6. All painting shall be performed by approved methods with number of coats modified as required to obtain the total dry film thickness specified. Spray painting shall be performed specifically by methods submitted and as approved by the Engineer.
7. All surfaces to be painted as well as the atmosphere in which painting is to be done shall be kept warm and dry by heating and ventilation, if necessary, until each coat of paint has hardened. Any defective paint shall be scraped off and repainted in accordance with the Engineer's directions.
8. Before final acceptance of the work, all damaged surfaces of paint shall be cleaned and repainted as directed by the Engineer.
9. Field painting shall only be conducted as touchup painting in the event the shop painting was damaged during transport to the site.

3.04 QUALITY CONTROL

- A. Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when coatings are being applied:
 1. Owner may engage the services of a qualified testing agency to sample coating material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 2. Testing agency will perform tests for compliance with specified requirements.
 3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with specified requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.

3.05 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or

damage adjacent finished surfaces.

- C. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Engineer, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.06 PAINTING SCHEDULE

- A. All colors will be selected in accordance with Section 2.02E above.
- B. The following types of paints by Tnemec Co. (TN), The Sherwin Williams Company (SW), PPG Protective & Marine Coatings, (PPG), and Ameron International (AME) have been used as a basis for the paint schedule; use one of these paints or equal:
 - 1. Epoxy:
 - a. TN: Hi-build Epoxoline II, Series N69.
 - b. SW: Macropoxy 646.
 - c. PPG: Pitt-Guard 97-145 Series Epoxy Mastic.
 - d. AME: Amerlock 2/400 Series Epoxy.
 - e. Or equal.
 - 2. Waterborne Cementitious Acrylic:
 - a. TN: Envirofil, Series 130-6602.
 - b. SW: Cement-Plex 875.
 - c. PPG: Cementitious Waterproofing Block Filler 95-217 Series.
 - d. AME: Amerlock 400 BF Epoxy Block Filler.
 - e. Or equal.
 - 3. High-Build Acrylic Polyurethane Enamel:
 - a. TN: Endura-Shield - semi-gloss, Series V73.
 - b. SW: Acrolon 218 HS.
 - c. PPG: Pitthane HB Semigloss Urethane 95-8800 Series.
 - d. AME: Amercoat 450HSG Polyurethane.
 - e. Or equal.
 - 4. High Heat Silicone Aluminum (to 600 degrees F):
 - a. TN: Silicone Aluminum (No. 39-661).
 - b. SW: Kem Hi-Temp No.850.
 - c. PPG: Speedhide 6-220 Series Silicone Aluminum Coating.
 - d. AME: Amercoat 878 Silicone Aluminum Coating.
 - e. Or equal.
 - 5. Tie Coat, Low VOC, Epoxy:
 - a. TN: FC Typoxy, Series V27.
 - b. SW: Macropoxy 646, B58 Series.
 - c. PPG: Pitt-Guard Epoxy Mastic 95-245 Series.

- d. AME: Amercoat 385 Multi-Purpose Epoxy.
 - e. Or equal.
6. Acrylic Latex Emulsion, Eggshell Finish:
- a. TN: Tneme-Cryl, Series 6.
 - b. SW: DTM Primer/Finish, B66 Series.
 - c. PPG: Pitt-Tech Plus 90-1110 Series Satin DTM Acrylic.
 - d. AME: Amercoat 220 Waterborne Acrylic.
 - e. Or equal.
7. Vinyl Acrylic Surface Sealer:
- a. TN: PVA Sealer, Series 51.
 - b. SW: Prep-Rite 200 Primer, B28 Series.
 - c. PPG: Speedhide 6-2 Vinyl Acrylic Drywall Primer.
 - d. AME: Amercoat 148 Acrylic Primer.
 - e. Or equal.
- C. The following surfaces shall have the types of paint scheduled below applied at the dry film thickness (DFT) in mils per coat as recommended by manufacturer:
1. Exterior non submerged ferrous metals (except first coat-hollow metal-pressed metal work):
- a. First Coat: On properly prepared unprimed metal or for touch-up:
 - 1) TN: Hi-build Epoxoline II, Series N69.
 - 2) SW: Macropoxy 646, B58 Series.
 - 3) PPG: Pitt-Guard 97-145 Series Epoxy Mastic.
 - 4) AME: Amerlock 2/400 Series Epoxy.
 - 5) Or equal.
 - b. Second Coat:
 - 1) TN: Hi-build Epoxoline II, Series N69.
 - 2) SW: Macropoxy 646, B58 Series.
 - 3) PPG: Pitt-Guard 97-145 Series Epoxy Mastic.
 - 4) AME: Amerlock 2/400 Series Epoxy.
 - 5) Or equal.
 - c. Third Coat:
 - 1) TN: Endura-Shield - semi-gloss, Series V73.
 - 2) SW: Acrolon 218 HS, B65 Series.
 - 3) PPG: Pitthane HB Semigloss Urethane 95-8800 Series.
 - 4) AME: Amercoat 450HSG Polyurethane.
 - 5) Or equal.
2. Interior non-submerged ferrous metals (except first coat of previously painted metal work), on properly prepared unprimed metal or for touch-up:
- a. First Coat:
 - 1) TN: Hi-build Epoxoline II, Series N69.
 - 2) SW: Macropoxy 646, B58 Series.
 - 3) PPG: Pitt-Guard 97-145 Series Epoxy Mastic.
 - 4) AME: Amerlock 2/400 Series Epoxy.

- 5) Or equal.
- b. Second and Third Coats:
 - 1) TN: Hi-build Epoxoline II, Series N69.
 - 2) SW: Macropoxy 646, B58 Series.
 - 3) PPG: Pitt-Guard 97-145 Series Epoxy Mastic.
 - 4) PPG: Amerlock 2/400 Series Epoxy.
 - 5) Or equal.
- 3. Aluminum Designated to be Painted:
 - a. Mechanically abrade surfaces to comply with SSPC SP 16 "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-ferrous Metals".
 - b. First and Second Coats - (Interior):
 - 1) TN: Hi-build Epoxoline II, Series N69.
 - 2) SW: Macropoxy 646, B58 Series.
 - 3) PPG: Pitt-Guard 97-145 Series Epoxy Mastic.
 - 4) AME: Amerlock 2/400 Series Epoxy.
 - 5) Or equal.
 - c. First Coat - (Exterior):
 - 1) TN: Hi-build Epoxoline II, Series N69.
 - 2) SW: Macropoxy 646, B58 Series.
 - 3) PPG: Pitt-Guard 97-145 Series Epoxy Mastic.
 - 4) AME: Amerlock 2/400 Series Epoxy.
 - 5) Or equal.
 - d. Second Coat - (Exterior):
 - 1) TN: Endura-Shield - semi-gloss, Series V73.
 - 2) SW: Acrolon 218 HS.
 - 3) PPG: Pitt-Guard 97-145 Series Epoxy Mastic.
 - 4) AME: Amerlock 2/400 Series Epoxy.
 - 5) Or equal.
- 4. Copper Piping:
 - a. First and Second Coats:
 - 1) TN: Hi-build Epoxoline II, Series N69.
 - 2) SW: Macropoxy 646, B58 Series.
 - 3) PPG: Pitt-Guard 97-145 Series Epoxy Mastic.
 - 4) AME: Amerlock 2/400 Series Epoxy.
 - 5) Or equal.
- 5. Previously Painted Metal Surfaces:
 - a. First coat on substrates prepared as approved and replacing first coat of above- specified systems. Complete painting with remainder of specified system for each type of substrate.
 - b. First Coat:
 - 1) TN: FC Typoxy, Series V27.
 - 2) SW: Macropoxy 646, B58 Series.
 - 3) PPG: Pitt-Guard 97-145 Series Epoxy Mastic.

- 4) AME: Amerlock 2/400 Series Epoxy.
 - 5) Or equal.
6. Exterior galvanized steel surfaces:
 - a. Mechanically abrade surfaces to comply with SSPC SP 16 "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-ferrous Metals".
 - b. First Coat:
 - 1) TN: FC Typoxy, Series V27.
 - 2) SW: Macropoxy 646, B58 Series.
 - 3) PPG: Pitt-Guard Epoxy Mastic 95-245 Series.
 - 4) AME: Amercoat 385 Multi-Purpose Epoxy.
 - 5) Or equal.
 - c. Second Coat:
 - 1) TN: Endura-Shield - semi-gloss, Series V73.
 - 2) SW: Acrolon 218 HS.
 - 3) PPG: Pitthane HB Semigloss Urethane 95-8800 Series.
 - 4) AME: Amercoat 450HSG Polyurethane.
 - 5) Or equal.

END OF SECTION

SECTION 10880
TRUCK SCALE AND APPURTENANCES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install, complete in every detail, two (2) above-ground hydrostatic truck scales with all appurtenances.
- B. All material and equipment shall conform to the plans and specifications and shall be new and unused.

1.02 RELATED WORK

- A. Earthwork is included in Division 02.
- B. Concrete work is included in Division 03
- C. Shop and Field Painting work is included in Division 09.

1.03 SUBMITTALS

- A. Submit, in accordance Section 01340, certified shop drawings and other material required to establish compliance with this Section. Shop drawings shall show details of design, materials, and dimensions of the equipment, complete electrical wiring diagrams, foundations, and anchor bolt-setting plans. Submittals shall include the following:
 - 1. A complete total bill of materials for all equipment.
 - 2. A list of the manufacturer's recommended spare parts with the manufacturer's current price for each item.
 - 3. Certificate of scale conformance from National Type Evaluation Program (NTEP).
 - 4. Certified engineering drawings for the scale foundation and scale outline.
 - 5. In the event that it is impossible to conform to certain details of this Section due to different manufacturing techniques, describe completely all non-conforming aspects.
 - 6. Complete instructions for the assembly and installation of the equipment specifically prepared for the furnished equipment, shall be furnished with the shop drawings. The instructions shall include specifications for the concrete and complete installation instructions for

the concrete deck surface.

7. Operation and Maintenance Data
 - a. Submit an operation and maintenance manual prepared specifically for this installation which shall include all required cuts, drawings, equipment list, descriptions, maintenance and lubrication schedules, trouble-shooting guides, spare parts lists, etc., that are required to instruct personnel unfamiliar with such equipment.
 - b. Submit user's manuals for each piece of scale hardware with instructions on interfacing with commercial box software programs.
 - c. A factory representative who has complete knowledge of the proper operation and maintenance shall be provided for up to 2 days to instruct representatives of the Owner and the Engineer on proper operation and maintenance. This work may be conducted in conjunction with the inspection of the installation and testing as provided under Paragraph 3.02 below. If there are difficulties in operation of the equipment due to the manufacturers' design or fabrication, additional service shall be provided at no additional cost to the Owner.

1.04 REFERENCE STANDARDS

- A. ASTM International
 1. ASTM A36 - Standard Specification for Carbon Structural Steel
- B. The Society for Protective Coatings (SSPC)
 1. SSPC SP6 - Surface Preparation Specification No. 6 Commercial Blast Cleaning
 2. SSPC SP8 - Surface Preparation Specification No. 8 Pickling
- C. American Institute of Steel Construction (AISC)
- D. American Welding Society (AWS)
- E. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

- A. All the equipment specified herein shall be standard products in regular production and shall be furnished by a single manufacturer who is fully experienced, reputable and qualified in the manufacture of the equipment furnished.

- B. Truck scale manufacturer shall have a minimum five years of experience in the manufacture and installation of truck scales. Scale manufacturer shall have installed scales of identical design in the State of North Carolina at solid waste facilities for at least 5 years. References shall be submitted upon request.
- C. Truck scale manufacturer shall have a scale service provider within a 50-mile radius of the project location that has been in continuous operations for the past five years.
- D. Scale installation, calibration, and maintenance shall be performed by a service provider authorized by the scale manufacturer.

1.06 SYSTEM DESCRIPTION

- A. Contractor shall provide all equipment necessary to have the scales described herein interface with the Owner's computers and software.
- B. The truck scale shall meet the following performance and design criteria:
 - 1. Capacity: 100 tons
 - 2. Weighing Surface: 70 feet long, 11 feet wide
 - 3. Deck: Field poured, low profile, modular concrete deck
 - 4. Weighment: Gross vehicle weight
- C. Weighing shall be accomplished through the use of hydrostatic, non-electronic load cells, Emery Winslow model 136-75, or approved equal. Load cell signal shall be transmitted by hydrostatic tubing lines to a summing totalizer which will be connected to a digital weight indicator, located in the scale house.
- D. Data center appurtenances shall include a load cell Summing Totalizer and digital weight indicator. Appurtenances shall be of the same manufacturer as the weigh scale to ensure compatibility of equipment for the truck scale system.
- E. Totalizer shall be Emery Winslow model 185-8E, or approved equal. Individual transducers for each load cell are not permitted. The use of electronic summing boards is not permitted.
- F. The digital weight indicator shall be Emery Winslow model 7600E, or approved equal.

1.07 MAINTENANCE

- A. Special tools if required for normal operation and maintenance shall be provided.
- B. Furnish all spare parts recommended by the manufacturer for the normal operation and maintenance of the equipment during the first year of operation.
 - 1. Three typing ribbons.
 - 2. 1000 blank tickets (four carbon copy-type).
 - 3. One set of printed circuit boards for all components.
- C. Load cells shall be readily available by the manufacturer and have next day delivery.

1.08 WARRANTY

- A. The Hydrostatic load cells shall be warranted for life against damage from lightning, power surges, welding currents, water, high pressure wash down, rodents, and RFI/EMI. The load cells shall further be warranted for ten (10) years against failure from defects in material and workmanship.
- B. The weighbridge shall have a five (5) year warranty against failure from defects in material and workmanship.
- C. The digital indicator shall be warranted for two (2) years against failure from defects in material and workmanship.
- D. The printer shall be warranted for two (2) years against failure from defects in material and workmanship.
- E. The summing network shall be warranted for two (2) years against failure from defects in material and workmanship.
- F. All other scale parts shall have at least a two (2) year manufacturer warranty.

PART 2 PRODUCTS

2.01 GENERAL

- A. The equipment furnished shall be designed and constructed in accordance with the best practices and methods and to operate satisfactorily when installed as described herein.
- B. All parts shall be designed and proportioned as to have liberal strength, stability, stiffness and to be especially adapted for the work to be done. Ample room and facilities shall be provided for inspection, repairs and adjustments.

- C. This Section calls attention to certain features but do not purport to cover all details of construction of the equipment.
- D. All structural steel used in the fabrication of the equipment shall conform to the requirements of the ASTM A36.
- E. Design and fabrication of structural steel members shall be in accordance with the latest AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings".
- F. All welding shall conform to the latest Standards of the AWS.
- G. The scale and accessory equipment shall conform to or exceed the requirements of National Bureau of Standards Handbook 44 for use in commerce. The scale and accessory equipment shall be accepted by the North Carolina Department of Agriculture and Consumer Services, Standards Division and NTEP for use as a certified scale facility. The manufacturer shall provide a Certificate of Conformance to their standards.

2.02 EQUIPMENT

- A. The scales shall be Emery Winslow Roadweigh II scale, or approved equal. The scale weighbridges shall be capable of weighing trucks that have dual axle weights of up to 60,000 lbs. and shall have a maximum capacity of 200,000 lbs. The weighbridge shall be a minimum 10" thick, steel reinforced, modular concrete structure and shall be free flowing in 360 degrees and shall not require stay bars or be rigidly checked. Top service ports shall be provided for easy access to load cells. Concrete to be poured by Contractor in the field.
- B. The scales shall be installed above ground, and shall be equipped with steel side rub rails, nominal 4-inch diameter, down the length of the scale on both sides.
- C. Load cells shall be hydrostatic, and non-electronic, model 136-75, and manufactured primarily out of grade 304 stainless steel, with hardened steel head parts and load column. Load cells shall be compression type, of minimum 75,000 lbs. capacity each.
- D. Load cells shall be immune to electrical damage, including lightning or electrical surges, and shall also be immune to damage from welding currents on or around the weighbridge. The load cells shall also be immune to damage from rodents, water and to RFI/EMI noise.
- E. The load cell shall measure and transmit the measurement through copper tubing lines to the Summing Totalizer. A Summing Totalizer shall be provided for each new scale. The totalizers for the outbound scale and the inbound MSW scale shall be located in the basement of the existing scale house. The totalizer for the C&D scale shall be mounted on the west wall of the existing

C&D scale house in a properly rated outdoor enclosure that has been supplied and approved by the manufacturer, and shall be provided with a 316SS sunshield to protect the electronics. Each outdoor enclosure and summing totalizer must be installed to the manufacturer's recommendations. This includes proper lightning protection, the avoidance of installation in direct sunlight, consideration of minimum clearances for maintenance.

- F. The scales shall be approved for use using any NTEP certified truck scale digital weight indicator with linearization capability, without affecting the scales legal-for-trade status.
- G. Scale instruments shall be located in the scale house attendant buildings as shown in the Drawings. In addition, the instrument shall be capable of self-diagnostics, equipped with an automatic tare range to full capacity, equipped with shielding and filtering against radio frequency and electrical interference.
- H. The digital weight indicators shall be model 7600E or approved equal, NTEP certified for truck scale use with 10,000 increment certifications. The digital weight indicator shall have front access to calibration functions, and the digital weight indicators shall be equipped with output compatibility for printers and/or computers. One port shall be set up for continuous RS-232 connection to a port on the existing weigh scale system PC, the other shall be for continuous 20mA current loop connection to the remote display.
- I. The digital weight indicator for each scale shall be interfaced to the existing data center software via existing RS-232 serial cabling. Refer to the Communication Overview drawing for all connections for the new and existing system.
- J. Electrical equipment and materials furnished under this Section shall conform to appropriate sections of Electrical Drawings.
- K. Electrical power requirements shall be 120 VAC, 60 Hz.

2.03 PAINTING

- A. All exposed ferrous surfaces shall receive a two-part epoxy prime coat and finish coat of urethane paint with UV protection at the manufacturer's shop. Prior to shop painting, all surfaces shall be thoroughly cleaned, dry, and free from all mill scale, rust, grease, dirt, paint and other foreign substances by sand blasting or pickling in accordance to SSPC-SP6 or SSPC- SP8, respectively.
- B. Gears, bearing surfaces or other surfaces obviously not to be painted shall

be given a heavy shop coat of grease or other rust resistant coating suitable for protection of the equipment during periods of storage and until such time as the equipment is started up for testing and operation. Areas of scales where concrete will be poured shall not receive a coat of grease or other resistant coating.

2.04 TRUCK SCALE SOFTWARE AND COMPUTER HARDWARE

- A. All truck scale computer hardware and software shall be compatible with scale management software by Interface Logic Systems.
- B. The truck scales and the electronic system shall be integrated with the scale software so that the scale weighing system is complete and operable for the Owner.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Scale and accessories shall be installed where shown on the Drawings and in accordance with manufacturer's approved shop drawings and installation procedures.
- B. Scale pier foundation shall be level and the washout slab between the piers shall be slightly sloped away from the scale house buildings to match current conditions. Scale foundation structural drawings shall be provided by the scale manufacturer.
- C. Load cell tubing lines shall be supplied under this Section but the furnishing and installation of conduit is shown on the Electrical Drawings. Installation of load cable and connecting cable from scale to scale attendant building according to scale manufacturers specifications.
- D. One grounding rod shall be provided for each scale platform.

3.02 INSPECTION AND TESTING

- A. The Contractor shall require the manufacturer to furnish the services of a factory representative for two (2) days, who has complete knowledge of proper operation and maintenance to inspect the final installation, calibrate the equipment, and supervise a test run of the equipment which demonstrates a well-integrated, operable truck weighing system. These services are in addition to those provided under PART 1.
- B. Contractor shall be responsible for scale footer meeting all requirements of Division 03 specifications prior to scale installation.
- C. If the scale or any equipment does not meet the requirements specified

herein, corrective measures shall be taken or the equipment removed and replaced with equipment which does meet these requirements.

- D. The complete scale installation shall be inspected, tested, and certified by a scale technician certified in North Carolina and all paper work shall be sent to a representative of the North Carolina Department of Agriculture and Consumer Services, Standard Division.
- E. If the complete scale installation does not meet state certification, corrective measures shall be taken or equipment removed and replaced with equipment which does meet state certification.
- F. Contractor shall coordinate installation of testing of scales with connection to Owner's software and hardware. Inspection, testing, and certification in Section 3.02 shall be performed while connected to the Owner's software and hardware. Contractor shall coordinate all the parties needed to produce working truck scales and reporting system for the Owner.

END OF SECTION