

PROJECT MANUAL

FOR

Central Plaza Drainage and Landscape
Improvements

for

Western Carolina University
Cullowhee, N.C.

April 14, 2023
Rev. November 13, 2023
Construction Set December 5, 2023

SCO Project ID#: 22-24778-01A
WCU Project #: 2019-011

Owner:
Western Carolina University
Facilities Management
3476 Old Cullowhee Road
Cullowhee, North Carolina 28723

Engineer/Designer:
Lofquist & Associates, Inc.
11 Citrus Drive
Sylva, North Carolina 28779
828-269-1157
Firm License No. C-2288

This Page Intentionally Blank

TABLE OF CONTENTS
for
CENTRAL PLAZA DRAINAGE AND
LANDSCAPE IMPROVEMENTS
Western Carolina University
Cullowhee, North Carolina
SCO ID #: 22-24778-01
WCU Project #: 2019-011



Section	Title	Number of Pages
0000	Advertisement for Bids	1
0100	Notice to Bidders	2
0200	Instructions to Bidders and General Conditions	45
0300	Supplementary General Conditions	7
0400	Guidelines for MBE Participation in State Construction Contracts	8
0500	Special Conditions	7
0600	Subsurface Investigation Report	23
0700	Allowances	7
0800	Unit Prices	2
02090	Rock Excavation	5
02110	Clearing, Grubbing & Demolition	4
02200	Earthwork	12
02210	Excavation, Trenching & Backfilling for Utilities	9
02370	Erosion & Sedimentation Control	4
02390	Seeding & Mulching	5
02630	Storm Drainage & Incidentals	10
02720	Aggregate Base & Gravel Surfaces	3
02740	Asphalt Pavements	9
02770	Concrete Pavements, Curbs and Sidewalks	13
02780	Brick Pavers and Incidentals	7
30005	Form of Proposal	10
30010	MBE Contractor List and Affidavits A through D	6
30015	Form of Bid Bond	1
30020	Form of Construction Contract	3
30025	Form of Performance Bond	2
30030	Form of Payment Bond	2
30035	Sheet for Attaching Power of Attorney	1
30040	Sheet for Attaching Insurance Certificates	1
30045	Approval of the Attorney General	1
30050	Certification by the Office of State Budget and Management	1

This Page Intentionally Blank

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

ADVERTISEMENT FOR BIDS

Sealed proposals will be received until 2:00 pm EST on Thursday, February 22, 2024, at Western Carolina University; Facilities Management, 3476 Old Cullowhee Road, Cullowhee, North Carolina 28723, for the construction of the Central Plaza Drainage and Landscape Improvements for Western Carolina University in Cullowhee, North Carolina at which time and place bids will be opened and read.

Pre-Bid Meeting

A NON-MANDATORY open pre-bid meeting will be held for all interested bidders on Tuesday, February 6, 2024, at 1:30 pm EST in the office of Western Carolina University Facilities Management, 3476 Old Cullowhee Road, Cullowhee, North Carolina 28723. Bidders are not required to have a representative attend the pre-bid meeting to be eligible to submit a bid.

Complete plans and specifications for this project can be obtained from Lofquist & Associates, Inc., 11 Citrus Drive, Sylva, North Carolina 28779, 828-269-1157 during normal office hours after January 23, 2024. Plan Deposit: \$150 refundable on return of documents in good condition.

The state (owner) reserves the unqualified right to reject any and all proposals.

Western Carolina University (owner)

This Page Intentionally Blank

NOTICE TO BIDDERS

Sealed proposals will be received by the **Western Carolina University** in the office of **Facilities Management, 3476 Old Cullowhee Road, Cullowhee, NC 28723, Attn: Daniel Fiskeaux, Project Manager** up to **2:00 p.m. EST on Thursday, February 22, 2024** and immediately thereafter publicly opened and read in the Facilities Management Department Conference Room for the furnishing of labor, material and equipment entering into the construction of: **Central Plaza Drainage and Landscape Improvements** on the WCU Campus in Cullowhee, NC. The project includes surface and subsurface drainage improvements and repairs to existing brick paver areas.

Bids will be received for single prime. All proposals shall be lump sum with unit bid prices for selected portion of the work and quantity allowances for unit bid price items.

Pre-Bid Meeting

A NON-MANDATORY pre-bid meeting will be held for all interested bidders on **Tuesday, February 6, 2024 at 1:30 p.m. EST at Facilities Management, 3476 Old Cullowhee Road, Cullowhee, NC 28723.** Bidders are not required to have a representative attend the pre-bid meeting to be eligible to submit a bid. The meeting will address the project scope and description and answer specific questions and issues, anticipated project schedule, bidding procedures, and bid forms. Participants will also be able to visit the building site following the administrative portion of the meeting. Interested subcontractors and manufacturer representatives are strongly encouraged to attend.

Complete plans, specifications and contract documents will be open for inspection in the offices of WCU Facilities Management and Lofquist & Associates, Inc. at 11 Citrus Drive, Sylva, NC and in the electronic plan rooms of: Associated General Contractors, Carolinas Branch; McGraw-Hill Dodge Corporation; Reed Construction Data (RCD); Hispanic Contractors Association of the Carolinas (HCAC) in Winston-Salem, Charlotte and Raleigh Areas – 877-227-1680; and the Cherokee Business Development Center, PO Box 1200, Ginger Lynn Welch Complex, 810 Acquoni Road, Cherokee, NC 28719, Phone: 828-497-1666.

Electronic copies of the documents are available at no cost. Hardcopies of the documents may be obtained upon deposit of One Hundred Fifty dollars (\$150.00) in cash or certified check. The full plan deposit will be returned to those bidders provided all documents are returned in good, usable condition within ten (10) days after the bid date.

NOTE: The bidder shall include with the bid proposal the form *Identification of Minority Business Participation* identifying the minority business participation it will use on the project and shall include either *Affidavit A* or *Affidavit B* as applicable. Forms and instructions are included within the Proposal Form in the bid documents. Failure to complete these forms is grounds for rejection of the bid. (GS143-128.2c Effective 1/1/2002.)

All contractors are hereby notified that they must have proper license as required under the state laws governing their respective trades.

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

General contractors are notified that Chapter 87, Article 1, General Statutes of North Carolina, will be observed in receiving and awarding general contracts. General contractors submitting bids on this project must have license classification for Unlimited or Highway.

NOTE--SINGLE PRIME CONTRACTS: Under GS 87-1, a contractor that superintends or manages construction of any building, highway, public utility, grading, structure or improvement shall be deemed a "general contractor" and shall be so licensed. Therefore a single prime project that involves other trades will require the single prime contractor to hold a proper General Contractors license. **EXCEPT:** On public buildings being bid single prime, where the total value of the general construction does not exceed 25% of the total construction value, contractors under GS87- Arts 2 and 4 (Plumbing, Mechanical & Electrical) may bid and contract directly with the Owner as the SINGLE PRIME CONTRACTOR and may subcontract to other properly licensed trades. [GS87-1.1- Rules .0210](#)

Each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company, insured by the Federal Deposit Insurance Corporation, of an amount equal to not less than five percent (5%) of the proposal, or in lieu thereof a bidder may offer a bid bond of five percent (5%) of the bid executed by a surety company licensed under the laws of North Carolina to execute the contract in accordance with the bid bond. Said deposit shall be retained by the owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten days after the award or to give satisfactory surety as required by law.

A performance bond and a payment bond will be required for one hundred percent (100%) of the contract price.

Payment will be made based on ninety-five percent (95%) of monthly estimates and final payment made upon completion and acceptance of work.

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of 75 days.

The owner reserves the right to reject any or all bids and to waive informalities.

Designer:
Lofquist & Associates, Inc.
Victor Lofquist, PE
11 Citrus Drive
Sylva, North Carolina, 28779
828-269-1157 (O)
victor.lofquist@frontier.com

Owner:
Western Carolina University
Facilities Management Department
3476 Old Cullowhee Road
Cullowhee, North Carolina 28723
PM-Daniel Fiskeaux (828) 227-3020
dfiskeaux@email.wcu.edu

**INSTRUCTIONS TO BIDDERS
AND
GENERAL CONDITIONS OF THE CONTRACT**

STANDARD FORM FOR CONSTRUCTION PROJECTS

**STATE CONSTRUCTION OFFICE
NORTH CAROLINA
DEPARTMENT OF ADMINISTRATION**

Form OC-15

This document is intended for use on State capital construction projects and shall not be used on any project that is not reviewed and approved by the State Construction Office. Extensive modification to the General Conditions by means of “Supplementary General Conditions” is strongly discouraged. State agencies and institutions may include special requirements in “Division 1 – General Requirements” of the specifications, where they do not conflict with the General Conditions.

Twenty Fourth Edition January 2013

INSTRUCTIONS TO BIDDERS

For a proposal to be considered it must be in accordance with the following instructions:

1. PROPOSALS

Proposals must be made in strict accordance with the Form of Proposal provided therefor, and all blank spaces for bids, alternates, and unit prices applicable to bidder's work shall be properly filled in. When requested alternates are not bid, the proposer shall so indicate by the words "No Bid". Any blanks shall also be interpreted as "No Bid". The bidder agrees that bid on Form of Proposal detached from specifications will be considered and will have the same force and effect as if attached thereto. Photocopied or faxed proposals will not be considered. Numbers shall be stated both in writing and in figures for the base bids and alternates. If figures and writing differ, the written number will supersede the figures.

Any modifications to the Form of Proposal (including alternates and/or unit prices) will disqualify the bid and may cause the bid to be rejected.

The bidder shall fill in the Form of Proposal as follows:

- a. If the documents are executed by a sole owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person executing them.
- b. If the documents are executed by a partnership, that fact shall be evidenced by the word "Co-Partner" appearing after the name of the partner executing them.
- c. If the documents are executed on the part of a corporation, they shall be executed by either the president or the vice president and attested by the secretary or assistant secretary in either case, and the title of the office of such persons shall appear after their signatures. The seal of the corporation shall be impressed on each signature page of the documents.
- d. If the proposal is made by a joint venture, it shall be executed by each member of the joint venture in the above form for sole owner, partnership or corporation, whichever form is applicable.
- e. All signatures shall be properly witnessed.
- f. If the contractor's license of a bidder is held by a person other than an owner, partner or officer of a firm, then the licensee shall also sign and be a party to the proposal. The title "Licensee" shall appear under his/her signature.

Proposals should be addressed as indicated in the Advertisement for Bids and be delivered, enclosed in an opaque sealed envelope, marked "Proposal" and bearing the title of the work, name of the bidder, and the contractor's license number of the bidder. Bidders should clearly mark on the outside of the bid envelope which contract(s) they are bidding.

Bidder shall identify on the bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts or an affidavit indicating work under contract will be self-performed, as required by G.S. 143-128.2(c) and G.S. 143-128.2(f). Failure to comply with these requirements is grounds for rejection of the bid.

For projects bid in the single-prime alternative, the names and license numbers of major subcontractors shall be listed on the proposal form.

It shall be the specific responsibility of the bidder to deliver his bid to the proper official at the selected place and prior to the announced time for the opening of bids. Later delivery of a bid for any reason, including delivery by any delivery service, shall disqualify the bid.

Unit prices quoted in the proposal shall include overhead and profit and shall be the full compensation for the contractor's cost involved in the work. See General Conditions, Article 19c-1.

2. EXAMINATION OF CONDITIONS

It is understood and mutually agreed that by submitting a bid the bidder acknowledges that he has carefully examined all documents pertaining to the work, the location, accessibility and general character of the site of the work and all existing buildings and structures within and adjacent to the site, and has satisfied himself as to the nature of the work, the condition of existing buildings and structures, the conformation of the ground, the character, quality and quantity of the material to be encountered, the character of the equipment, machinery, plant and any other facilities needed preliminary to and during prosecution of the work, the general and local conditions, the construction hazards, and all other matters, including, but not limited to, the labor situation which can in any way affect the work under the contract, and including all safety measures required by the Occupational Safety and Health Act of 1970 and all rules and regulations issued pursuant thereto. It is further mutually agreed that by submitting a proposal the bidder acknowledges that he has satisfied himself as to the feasibility and meaning of the plans, drawings, specifications and other contract documents for the construction of the work and that he accepts all the terms, conditions and stipulations contained therein; and that he is prepared to work in cooperation with other contractors performing work on the site.

Reference is made to contract documents for the identification of those surveys and investigation reports of subsurface or latent physical conditions at the site or otherwise affecting performance of the work which have been relied upon by the designer in preparing the documents. The owner will make copies of all such surveys and reports available to the bidder upon request.

Each bidder may, at his own expense, make such additional surveys and investigations as he may deem necessary to determine his bid price for the performance of the work. Any on-site investigation shall be done at the convenience of the owner. Any reasonable request for access to the site will be honored by the owner.

3. BULLETINS AND ADDENDA

Any addenda to specifications issued during the time of bidding are to be considered covered in the proposal and in closing a contract they will become a part thereof. It shall be the bidder's responsibility to ascertain prior to bid time the addenda issued and to see that his bid includes any changes thereby required.

Should the bidder find discrepancies in, or omission from, the drawings or documents or should he be in doubt as to their meaning, he shall at once notify the designer who will send written instructions in the form of addenda to all bidders. Notification should be no later than seven (7) days prior to the date set for receipt of bids. Neither the owner nor the designer will be responsible for any oral instructions.

All addenda should be acknowledged by the bidder(s) on the Form of Proposal. However, even if not acknowledged, by submitting a bid, the bidder has certified that he has reviewed all issued addenda and has included all costs associated within his bid.

4. BID SECURITY

Each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company insured by the Federal Deposit Insurance Corporation, or a bid bond in an amount equal to not less than five percent (5%) of the proposal, said deposit to be retained by the owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten (10) days after the award or to give satisfactory surety as required by law (G.S. 143-129).

Bid bond shall be conditioned that the surety will, upon demand, forthwith make payment to the obligee upon said bond if the bidder fails to execute the contract. The owner may retain bid securities of any bidder(s) who may have a reasonable chance of award of contract for the full duration of time stated in the Notice to Bidders. Other bid securities may be released sooner, at the discretion of the owner. All bid securities (cash or certified checks) shall be returned to the bidders promptly after award of contracts, and no later than seven (7) days after expiration of the holding period stated in the Notice to Bidders. Standard Form of Bid Bond is included in these specifications and shall be used.

5. RECEIPT OF BIDS

Bids shall be received in strict accordance with requirements of the General Statutes of North Carolina. Bid security shall be required as prescribed by statute. Prior to the closing of the bid, the bidder will be permitted to change or withdraw his bid. Guidelines for opening of public construction bids are available from the State Construction Office.

6. OPENING OF BIDS

Upon opening, all bids shall be read aloud. Once bidding is closed, there shall not be any withdrawal of bids by any bidder and no bids may be returned by the designer to any bidder. After the opening of bids, no bid may be withdrawn, except under the provisions of General Statute 143-129.1, for a period of thirty days unless otherwise specified. Should the successful bidder default and fail to execute a contract, the contract may be awarded to the next lowest and responsible bidder. The owner reserves the unqualified right to reject any and all bids. Reasons for rejection may include, but shall not be limited to, the following:

- a. If the Form of Proposal furnished to the bidder is not used or is altered.
- b. If the bidder fails to insert a price for all bid items, alternate and unit prices requested.
- c. If the bidder adds any provisions reserving the right to accept or reject any award.
- d. If there are unauthorized additions or conditional bids, or irregularities of any kind which tend to make the proposal incomplete, indefinite or ambiguous as to its meaning.
- e. If the bidder fails to complete the proposal form where information is requested so the bid may be properly evaluated by the owner.
- f. If the unit prices contained in the bid schedule are unacceptable to the owner and the State Construction Office.
- g. If the bidder fails to comply with other instructions stated herein.

7. BID EVALUATION

The award of the contract will be made to the lowest responsible bidder as soon as practical. The owner may award on the basis of the base bid and any alternates the owner chooses.

Before awarding a contract, the owner may require the apparent low bidder to qualify himself to be a responsible bidder by furnishing any or all of the following data:

- a. The latest financial statement showing assets and liabilities of the company or other information satisfactory to the owner.
- b. A listing of completed projects of similar size.
- c. Permanent name and address of place of business.
- d. The number of regular employees of the organization and length of time the organization has been in business under present name.
- e. The name and home office address of the surety proposed and the name and address of the responsible local claim agent.
- f. The names of members of the firms who hold appropriate trade licenses, together with license numbers.
- g. If prequalified, contractor info will be reviewed and evaluated comparatively to submitted prequalification package.

Failure or refusal to furnish any of the above information, if requested, shall constitute a basis for disqualification of any bidder.

In determining the lowest responsible, responsive bidder, the owner shall take into consideration the bidder's compliance with the requirements of G.S. 143-128.2(c), the past performance of the bidder on construction contracts for the State with particular concern given to completion times, quality of work, cooperation with other contractors, and cooperation with the designer and owner. Failure of the low bidder to furnish affidavit and/or documentation as required by G.S. 143-128.2(c) shall constitute a basis for disqualification of the bid.

Should the owner adjudge that the apparent low bidder is not the lowest responsible, responsive bidder by virtue of the above information, said apparent low bidder will be so notified and his bid security shall be returned to him.

8. PERFORMANCE BOND

The successful bidder, upon award of contract, shall furnish a performance bond in an amount equal to 100 percent of the contract price. See Article 35, General Conditions.

9. PAYMENT BOND

The successful bidder, upon award of contract, shall furnish a payment bond in an amount equal to 100 percent of the contract price. See Article 35, General Conditions.

10. PAYMENTS

Payments to the successful bidders (contractors) will be made on the basis of monthly estimates. See Article 31, General Conditions.

11. PRE-BID CONFERENCE

Prior to the date set for receiving bids, the Designer may arrange and conduct a Pre-Bid Conference for all prospective bidders. The purpose of this conference is to review project requirements and to respond to questions from prospective bidders and their subcontractors or material suppliers related to the intent of bid documents. Attendance by prospective bidders shall be as required by the "Notice to Bidders".

12. SUBSTITUTIONS

In accordance with the provisions of G.S. 133-3, material, product, or equipment substitutions proposed by the bidders to those specified herein can only be considered during the bidding phase until ten (10) days prior to the receipt of bids when submitted to the Designer with sufficient data to confirm material, product, or equipment equality. Proposed substitutions submitted after this time will be considered only as potential change order.

Submittals for proposed substitutions shall include the following information:

- a. Name, address, and telephone number of manufacturer and supplier as appropriate.
- b. Trade name, model or catalog designation.
- c. Product data including performance and test data, reference standards, and technical descriptions of material, product, or equipment. Include color samples and samples of available finishes as appropriate.
- d. Detailed comparison with specified products including performance capabilities, warranties, and test results.
- e. Other pertinent data including data requested by the Designer to confirm product equality.

If a proposed material, product, or equipment substitution is deemed equal by the Designer to those specified, all bidders of record will be notified by Addendum.

GENERAL CONDITIONS OF THE CONTRACT

The use or reproduction of this document or any part thereof is authorized for and limited to use on projects of the State of North Carolina, and is distributed by, through and at the discretion of the State Construction Office, Raleigh, North Carolina, for that distinct and sole purpose.

TABLE OF CONTENTS

ARTICLE	TITLE	PAGE
1	Definitions	9
2	Intent and Execution of Documents	11
3	Clarifications and Detail Drawings	12
4	Copies of Drawings and Specifications	12
5	Shop Drawings, Submittals, Samples, Data	13
6	Working Drawings and Specifications at the Job Site	13
7	Ownership of Drawings and Specifications	14
8	Materials, Equipment, Employees	14
9	Royalties, Licenses and Patent	15
10	Permits, Inspections, Fees, Regulations	15
11	Protection of Work, Property and the Public	16
12	Sedimentation Pollution Control Act of 1973	17
13	Inspection of the Work	17
14	Construction Supervision and Schedule	18
15	Separate Contracts and Contractor Relationships	22
16	Subcontracts and Subcontractors	23
17	Contractor and Subcontractor Relationships	23
18	Designer's Status	24
19	Changes in the Work	25
20	Claims for Extra Cost	27
21	Minor Changes in the Work	29
22	Uncorrected Faulty Work	29
23	Time of Completion, Delays, Extension of Time	29
24	Partial Utilization: Beneficial Occupancy	30
25	Final Inspection, Acceptance, and Project Closeout	31
26	Correction of Work Before Final Payment	31
27	Correction of Work After Final Payment	32
28	Owner's Right to Do Work	32
29	Annulment of Contract	32
30	Contractor's Right to Stop Work or Terminate the Contract	33
31	Requests for Payments	33
32	Certificates of Payment and Final Payment	34
33	Payments Withheld	36
34	Minimum Insurance Requirements	36
35	Performance Bond and Payment Bond	37
36	Contractor's Affidavit	38
37	Assignments	38
38	Use of Premises	38
39	Cutting, Patching and Digging	38
40	Utilities, Structures, Signs	38
41	Cleaning Up	40
42	Guarantee	41

43	Codes and Standards	41
44	Indemnification	41
45	Taxes	41
46	Equal Opportunity Clause	42
47	Employment of the Handicapped	42
48	Asbestos-Containing Materials (ACM)	43
49	Minority Business Participation	43
50	Contractor Evaluation	43
51	Gifts	43
52	Auditing Access to Persons and Records	44
53	North Carolina False Claims Act.....	44
54	Termination for Convenience.....	45

ARTICLE 1 - DEFINITIONS

- a. The **contract documents** consist of the Notice to Bidders; Instructions to Bidders; General Conditions of the Contract; special conditions if applicable; Supplementary General Conditions; the drawing and specifications, including all bulletins, addenda or other modifications of the drawings and specifications incorporated into the documents prior to their execution; the proposal; the contract; the performance bond; the payment bond; insurance certificates; the approval of the attorney general; and the certificate of the Office of State Budget and Management. All of these items together form the contract.
- b. The **owner** is the State of North Carolina through the agency named in the contract.
- c. The **designer(s)** are those referred to within this contract, or their authorized representatives. The Designer(s), as referred to herein, shall mean architect and/or engineer. They will be referred to hereinafter as if each were of the singular number, masculine gender.
- d. The **contractor**, as referred to hereinafter, shall be deemed to be either of the several contracting parties called the "Party of the First Part" in either of the several contracts in connection with the total project. Where, in special instances hereinafter, a particular contractor is intended, an adjective precedes the word "contractor," as "general," "heating," etc. For the purposes of a single prime contract, the term Contractor shall be deemed to be the single contracting entity identified as the "Party of the First Part" in the single Construction Contract. Any references or adjectives that name or infer multiple prime contractors shall be interpreted to mean the single prime Contractor.
- e. A **subcontractor**, as the term is used herein, shall be understood to be one who has entered into a direct contract with a contractor, and includes one who furnishes materials worked to a special design in accordance with plans and specifications covered by the contract, but does not include one who only sells or furnishes materials not requiring work so described or detailed.
- f. **Written notice** shall be defined as notice in writing delivered in person to the contractor, or to a partner of the firm in the case of a partnership, or to a member of the contracting organization, or to an officer of the organization in the case of a corporation, or sent to the last known business address of the contracting organization by registered mail.
- g. **Work**, as used herein as a noun, is intended to include materials, labor, and workmanship of the appropriate contractor.
- h. The **project** is the total construction work to be performed under the contract documents by the several contractors.
- i. **Project Expediter**, as used herein, is an entity stated in the contract documents, designated to effectively facilitate scheduling and coordination of work activities. See Article 14(f) for responsibilities of a Project Expediter. **For the purposes of a single prime contract, the single prime contractor shall be designated as the Project Expediter.**
- j. **Change order**, as used herein, shall mean a written order to the contractor subsequent to the signing of the contract authorizing a change in the contract. The change order shall be signed by the contractor, designer and the owner, and approved by the State Construction Office, in that order (Article 19).

- k. **Field Order**, as used herein, shall mean a written approval for the contractor to proceed with the work requested by owner prior to issuance of a formal Change Order. The field order shall be signed by the contractor, designer, owner, and State Construction Office.
- l. **Time of completion**, as stated in the contract documents, is to be interpreted as consecutive calendar days measured from the date established in the written Notice to Proceed, or such other date as may be established herein (Article 23).
- m. **Liquidated damages**, as stated in the contract documents [, is an amount reasonably estimated in advance to cover the consequential damages associated with the Owner's economic loss in not being able to use the Project for its intended purposes at the end of the contract's completion date as amended by change order, if any, by reason of failure of the contractor(s) to complete the work within the time specified. Liquidated damages does not include the Owner's extended contract administration costs (including but not limited to additional fees for architectural and engineering services, testing services, inspection services, commissioning services, etc.), such other damages directly resulting from delays caused solely by the contractor, or consequential damages that the Owner identified in the bid documents that may be impacted by any delay caused solely by the Contractor (e.g., if a multi-phased project-subsequent phases, delays in start other projects that are dependent on the completion of this Project, extension of leases and/or maintenance agreements for other facilities).
- n. **Surety**, as used herein, shall mean the bonding company or corporate body which is bound with and for the contractor, and which engages to be responsible for the contractor and his acceptable performance of the work.
- o. **Routine written communications between the Designer and the Contractor** are any communication other than a "request for information" provided in letter, memo, or transmittal format, sent by mail, courier, electronic mail, or facsimile. Such communications can not be identified as "request for information".
- p. **Clarification or Request for information (RFI)** is a request from the Contractor seeking an interpretation or clarification by the Designer relative to the contract documents. The RFI, which shall be labeled (RFI), shall clearly and concisely set forth the issue or item requiring clarification or interpretation and why the response is needed. The RFI must set forth the Contractor's interpretation or understanding of the contract documents requirements in question, along with reasons for such an understanding.
- q. **Approval** means written or imprinted acknowledgement that materials, equipment or methods of construction are acceptable for use in the work.
- r. **Inspection** shall mean examination or observation of work completed or in progress to determine its compliance with contract documents.
- s. **"Equal to" or "approved equal"** shall mean materials, products, equipment, assemblies, or installation methods considered equal by the bidder in all characteristics (physical, functional, and aesthetic) to those specified in the contract documents. Acceptance of equal is subject to approval of Designer and owner.
- t. **"Substitution" or "substitute"** shall mean materials, products, equipment, assemblies, or installation methods deviating in at least one characteristic (physical, functional, or aesthetic) from those specified, but which in the opinion of the bidder would improve competition and/or enhance the finished installation. Acceptance of substitution is subject to the approval of the Designer and owner.

- u. **Provide** shall mean furnish and install complete in place, new, clean, operational, and ready for use.
- v. **Indicated and shown** shall mean provide as detailed, or called for, and reasonably implied in the contract documents.
- w. **Special inspector** is one who inspects materials, installation, fabrication, erection or placement of components and connections requiring special expertise to ensure compliance with the approved construction documents and referenced standards.
- x. **Commissioning** is a quality assurance process that verifies and documents that building components and systems operate in accordance to the owner's project requirements and the project design documents.
- y. **Designer Final Inspection** is the inspection performed by the design team to determine the completeness of the project in accordance with approved plans and specifications. This inspection occurs prior to SCO final inspection.
- z. **SCO Final Inspection** is the inspection performed by the State Construction Office to determine the completeness of the project in accordance with NC Building Codes and approved plans and specifications.
- aa. **Beneficial Occupancy** is requested by the owner and is occupancy or partial occupancy of the building after all life safety items have been completed as determined by the State Construction Office. Life safety items include but not limited to fire alarm, sprinkler, egress and exit lighting, fire rated walls, egress paths and security.
- bb. Final Acceptance is the date in which the State Construction Office accepts the construction as totally complete. This includes the SCO Final Inspection and certification by the designer that all punch lists are completed.

ARTICLE 2 - INTENT AND EXECUTION OF DOCUMENTS

- a. The drawings and specifications are complementary, one to the other, and that which is shown on the drawings or called for in the specifications shall be as binding as if it were both called for and shown. The intent of the drawings and specifications is to establish the scope of all labor, materials, transportation, equipment, and any and all other things necessary to provide a bid for a complete job. In case of discrepancy or disagreement in the contract documents, the order of precedence shall be: Form of Contract, specifications, large-scale detail drawings, small-scale drawings.
- b. The wording of the specifications shall be interpreted in accordance with common usage of the language except that words having a commonly used technical or trade meaning shall be so interpreted in preference to other meanings.
- c. The contractor shall execute each copy of the proposal, contract, performance bond and payment bond as follows:
 - 1. If the documents are executed by a sole owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person executing them.
 - 2. If the documents are executed by a partnership, that fact shall be evidenced by the word "Co-Partner" appearing after the name of the partner executing them.

3. If the documents are executed on the part of a corporation, they shall be executed by either the president or the vice president and attested by the secretary or assistant secretary in either case, and the title of the office of such persons shall appear after their signatures. The seal of the corporation shall be impressed on each signature page of the documents.
4. If the documents are made by a joint venture, they shall be executed by each member of the joint venture in the above form for sole owner, partnership or corporation, whichever form is applicable to each particular member.
5. All signatures shall be properly witnessed.
6. If the contractor's license is held by a person other than an owner, partner or officer of a firm, then the licensee shall also sign and be a party to the contract. The title "Licensee" shall appear under his/her signature.
7. The bonds shall be executed by an attorney-in-fact. There shall be attached to each copy of the bond a certified copy of power of attorney properly executed and dated.
8. Each copy of the bonds shall be countersigned by an authorized individual agent of the bonding company licensed to do business in North Carolina. The title "Licensed Resident Agent" shall appear after the signature.
9. The seal of the bonding company shall be impressed on each signature page of the bonds.
10. The contractor's signature on the performance bond and the payment bond shall correspond with that on the contract. The date of performance and payment bond shall not be prior to the date of the contract.

ARTICLE 3 - CLARIFICATIONS AND DETAIL DRAWINGS

- a. In such cases where the nature of the work requires clarification by the designer, such clarification shall be furnished by the designer with reasonable promptness by means of written instructions or detail drawings, or both. Clarifications and drawings shall be consistent with the intent of contract documents, and shall become a part thereof.
- b. The contractor(s) and the designer shall prepare, if deemed necessary, a schedule fixing dates upon which foreseeable clarifications will be required. The schedule will be subject to addition or change in accordance with progress of the work. The designer shall furnish drawings or clarifications in accordance with that schedule. The contractor shall not proceed with the work without such detail drawings and/or written clarifications.

ARTICLE 4 - COPIES OF DRAWINGS AND SPECIFICATIONS

The designer or Owner shall furnish free of charge to the contractors electronic copies of plans and specifications. If requested by the contractor, paper copies of plans and specifications shall be furnished free of charge as follows:

- a. General contractor - Up to twelve (12) sets of general contractor drawings and specifications, up to six (6) sets of which shall include drawings and specifications of all other contracts, plus a clean set of black line prints on white paper of all appropriate drawings, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents.

- b. Each other contractor - Up to six (6) sets of the appropriate drawings and specifications, up to three (3) sets of which shall include drawings and specifications of all other contracts, plus a clean set of black line prints on white paper of all appropriate drawings, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents.
- c. Additional sets shall be furnished at cost, including mailing, to the contractor upon request by the contractor. This cost shall be stated in the bidding documents.
- d. For the purposes of a single-prime contract, the contractor shall receive up to 30 sets of drawings and specifications, plus a clean set of black line prints on white paper of all appropriate drawings, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents.

ARTICLE 5 - SHOP DRAWINGS, SUBMITTALS, SAMPLES, DATA

- a. Within 15 consecutive calendar days after the notice to proceed, each prime contractor shall submit a schedule for submission of all shop drawings, product data, samples, and similar submittals through the Project Expediter to the Designer. This schedule shall indicate the items, relevant specification sections, other related submittal, data, and the date when these items will be furnished to the designer.
- b. The Contractor(s) shall review, approve and submit to the Designer all Shop Drawings, Coordination Drawings, Product Data, Samples, Color Charts, and similar submittal data required or reasonably implied by the Contract Documents. Required Submittals shall bear the Contractor's stamp of approval, any exceptions to the Contract Documents shall be noted on the submittals, and copies of all submittals shall be of sufficient quantity for the Designer to retain up to three (3) copies of each submittal for his own use plus additional copies as may be required by the Contractor. Submittals shall be presented to the Designer in accordance with the schedule submitted in paragraph (a). so as to cause no delay in the activities of the Owner or of separate Contractors.
- c. The Designer shall review required submittals promptly, noting desired corrections if any, and retaining three (3) copies (1 for the Designer, 1 for the owner and 1 for SCO) for his use. The remaining copies of each submittal shall be returned to the Contractor not later than twenty (20) days from the date of receipt by the Designer, for the Contractor's use or for corrections and resubmittal as noted by the Designer. When resubmittals are required, the submittal procedure shall be the same as for the original submittals.
- d. Approval of shop drawings/submittals by the Designer shall not be construed as relieving the Contractor from responsibility for compliance with the design or terms of the contract documents nor from responsibility of errors of any sort in the shop drawings, unless such lack of compliance or errors first have been called in writing to the attention of the Designer by the Contractor.

ARTICLE 6 - WORKING DRAWINGS AND SPECIFICATIONS AT THE JOB SITE

- a. The contractor shall maintain, in readable condition at his job office, one complete set of working drawings and specifications for his work including all shop drawings. Such drawings and specifications shall be available for use by the designer, his authorized representative, owner or State Construction Office.

- b. The contractor shall maintain at the job office, a day-to-day record of work-in-place that is at variance with the contract documents. Such variations shall be fully noted on project drawings by the contractor and submitted to the designer upon project completion and no later than 30 days after final acceptance of the project.
- c. The contractor shall maintain at the job office a record of all required tests that have been performed, clearly indicating the scope of work inspected and the date of approval or rejection.

ARTICLE 7 - OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

All drawings and specifications are instruments of service and remain the property of the owner. The use of these instruments on work other than this contract without permission of the owner is prohibited. All copies of drawings and specifications other than contract copies shall be returned to the owner upon request after completion of the work.

ARTICLE 8 - MATERIALS, EQUIPMENT, EMPLOYEES

- a. The contractor shall, unless otherwise specified, supply and pay for all labor, transportation, materials, tools, apparatus, lights, power, heat, sanitary facilities, water, scaffolding and incidentals necessary for the completion of his work, and shall install, maintain and remove all equipment of the construction, other utensils or things, and be responsible for the safe, proper and lawful construction, maintenance and use of same, and shall construct in the best and most workmanlike manner, a complete job and everything incidental thereto, as shown on the plans, stated in the specifications, or reasonably implied therefrom, all in accordance with the contract documents.
- b. All materials shall be new and of quality specified, except where reclaimed material is authorized herein and approved for use. Workmanship shall at all times be of a grade accepted as the best practice of the particular trade involved, and as stipulated in written standards of recognized organizations or institutes of the respective trades except as exceeded or qualified by the specifications.
- c. Upon notice, the contractor shall furnish evidence as to quality of materials.
- d. Products are generally specified by ASTM or other reference standard and/or by manufacturer's name and model number or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product and manufacturer combination listed. However, the contractor shall be aware that the cited examples are used only to denote the quality standard of product desired and that they do not restrict bidders to a specific brand, make, manufacturer or specific name; that they are used only to set forth and convey to bidders the general style, type, character and quality of product desired; and that equivalent products will be acceptable. Request for substitution of materials, items, or equipment shall be submitted to the designer for approval or disapproval; such approval or disapproval shall be made by the designer prior to the opening of bids. Alternate materials may be requested after the award if it can clearly be demonstrated that it is an added benefit to the owner and the designer and owner approves.
- e. The designer is the judge of equality for proposed substitution of products, materials or equipment.

- g. If at any time during the construction and completion of the work covered by these contract documents, the language, conduct, or attire of any workman of the various crafts be adjudged a nuisance to the owner or designer, or if any workman be considered detrimental to the work, the contractor shall order such parties removed immediately from grounds.

ARTICLE 9 - ROYALTIES, LICENSES AND PATENTS

It is the intention of the contract documents that the work covered herein will not constitute in any way infringement of any patent whatsoever unless the fact of such patent is clearly evidenced herein. The contractor shall protect and save harmless the owner against suit on account of alleged or actual infringement. The contractor shall pay all royalties and/or license fees required on account of patented articles or processes, whether the patent rights are evidenced hereinafter.

ARTICLE 10 - PERMITS, INSPECTIONS, FEES, REGULATIONS

- a. The contractor shall give all notices and comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work under this contract. If the contractor observes that the drawings and specifications are at variance therewith, he shall promptly notify the designer in writing. See Instructions to Bidders, Paragraph 3, Bulletins and Addenda. Any necessary changes required after contract award shall be made by change order in accordance with Article 19. If the contractor performs any work knowing it to be contrary to such laws, ordinances, codes, rules and regulations, and without such notice to the designer, he shall bear all cost arising therefrom. Additional requirements implemented after bidding will be subject to equitable negotiations.
- b. All work under this contract shall conform to the North Carolina State Building Code and other State, local and national codes as are applicable. The cost of all required inspections and permits shall be the responsibility of the contractor and included within the bid proposal. All water taps, meter barrels, vaults and impact fees shall be paid by the contractor unless otherwise noted.
- d. Projects constructed by the State of North Carolina or by any agency or institution of the State are not subject to inspection by any county or municipal authorities and are not subject to county or municipal building codes. The contractor shall, however, cooperate with the county or municipal authorities by obtaining building permits. Permits shall be obtained at no cost.
- e. Projects involving local funding (community colleges) are subject also to county and municipal building codes and inspection by local authorities. The contractor shall pay the cost of these permits and inspections.

ARTICLE 11 - PROTECTION OF WORK, PROPERTY AND THE PUBLIC

- a. The contractors shall be jointly responsible for the entire site and the building or construction of the same and provide all the necessary protections, as required by the owner or designer, and by laws or ordinances governing such conditions. They shall be responsible for any damage to the owner's property, or of that of others on the job, by them, their personnel, or their subcontractors, and shall make good such damages. They shall be responsible for and pay for any damages caused to the owner. All contractors shall have access to the project at all times.
- b. The contractor shall provide cover and protect all portions of the structure when the work is not in progress, provide and set all temporary roofs, covers for doorways, sash and windows, and all other materials necessary to protect all the work on the building, whether set by him, or any of the subcontractors. Any work damaged through the lack of proper protection or from any other cause, shall be repaired or replaced without extra cost to the owner.
- c. No fires of any kind will be allowed inside or around the operations during the course of construction without special permission from the designer and owner.
- d. The contractor shall protect all trees and shrubs designated to remain in the vicinity of the operations by building substantial boxes around same. He shall barricade all walks, roads, etc., as directed by the designer to keep the public away from the construction. All trenches, excavations or other hazards in the vicinity of the work shall be well barricaded and properly lighted at night.
- e. The contractor shall provide all necessary safety measures for the protection of all persons on the job, including the requirements of the A.G.C. *Accident Prevention Manual in Construction*, as amended, and shall fully comply with all state laws or regulations and North Carolina State Building Code requirements to prevent accident or injury to persons on or about the location of the work. He shall clearly mark or post signs warning of hazards existing, and shall barricade excavations, elevator shafts, stairwells and similar hazards. He shall protect against damage or injury resulting from falling materials and he shall maintain all protective devices and signs throughout the progress of the work.
- f. The contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor relating to Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926, published in Volume 39, Number 122, Part II, June 24, 1974, *Federal Register*), and revisions thereto as adopted by General Statutes of North Carolina 95-126 through 155.
- g. The contractor shall designate a responsible person of his organization as safety officer/inspector to inspect the project site for unsafe health and safety hazards, to report these hazards to the contractor for correction, and whose duties also include accident prevention on the project, and to provide other safety and health measures on the project site as required by the terms and conditions of the contract. The name of the safety inspector shall be made known to the designer and owner at the time of the preconstruction conference and in all cases prior to any work starting on the project.
- h. In the event of emergency affecting the safety of life, the protection of work, or the safety of adjoining properties, the contractor is hereby authorized to act at his own discretion, without further authorization from anyone, to prevent such threatened injury or damage.

Any compensation claimed by the contractor on account of such action shall be determined as provided for under Article 19(b).

- i. Any and all costs associated with correcting damage caused to adjacent properties of the construction site or staging area shall be borne by the contractor. These costs shall include but not be limited to flooding, mud, sand, stone, debris, and discharging of waste products.

ARTICLE 12 - SEDIMENTATION POLLUTION CONTROL ACT OF 1973

- a. Any land-disturbing activity performed by the contractor(s) in connection with the project shall comply with all erosion control measures set forth in the contract documents and any additional measures which may be required in order to ensure that the project is in full compliance with the Sedimentation Pollution Control Act of 1973, as implemented by Title 15, North Carolina Administrative Code, Chapter 4, Sedimentation Control, Subchapters 4A, 4B and 4C, as amended (15 N.C.A.C. 4A, 4B and 4C).
- b. Upon receipt of notice that a land-disturbing activity is in violation of said act, the contractor(s) shall be responsible for ensuring that all steps or actions necessary to bring the project in compliance with said act are promptly taken.
- c. The contractor(s) shall be responsible for defending any legal actions instituted pursuant to N.C.G.S. 113A-64 against any party or persons described in this article.
- d. To the fullest extent permitted by law, the contractor(s) shall indemnify and hold harmless the owner, the designer and the agents, consultants and employees of the owner and designer, from and against all claims, damages, civil penalties, losses and expenses, including, but not limited to, attorneys' fees, arising out of or resulting from the performance of work or failure of performance of work, provided that any such claim, damage, civil penalty, loss or expense is attributable to a violation of the Sedimentation Pollution Control Act. Such obligation shall not be construed to negate, abridge or otherwise reduced any other right or obligation of indemnity which would otherwise exist as to any party or persons described in this article.

ARTICLE 13 - INSPECTION OF THE WORK

- a. It is a condition of this contract that the work shall be subject to inspection during normal working hours and during any time work is in preparation and progress by the designer, designated official representatives of the owner, State Construction Office and those persons required by state law to test special work for official approval. The contractor shall therefore provide safe access to the work at all times for such inspections.
- b. All instructions to the contractor will be made only by or through the designer or his designated project representative. Observations made by official representatives of the owner shall be conveyed to the designer for review and coordination prior to issuance to the contractor.
- c. All work shall be inspected by designer, special inspector and/or State Construction Office prior to being covered by the contractor. Contractor shall give a minimum two weeks notice unless otherwise agreed to by all parties. If inspection fails, after the first reinspection all costs associated with additional reinspections shall be borne by the contractor.

- d. Where special inspection or testing is required by virtue of any state laws, instructions of the designer, specifications or codes, the contractor shall give adequate notice to the designer of the time set for such inspection or test, if the inspection or test will be conducted by a party other than the designer. Such special tests or inspections will be made in the presence of the designer, or his authorized representative, and it shall be the contractor's responsibility to serve ample notice of such tests.
- e. All laboratory tests shall be paid by the owner unless provided otherwise in the contract documents except the general contractor shall pay for laboratory tests to establish design mix for concrete, and for additional tests to prove compliance with contract documents where materials have tested deficient except when the testing laboratory did not follow the appropriate ASTM testing procedures.
- f. Should any work be covered up or concealed prior to inspection and approval by the designer, special inspector, and/or State Construction Office such work shall be uncovered or exposed for inspection, if so requested by the designer in writing. Inspection of the work will be made upon notice from the contractor. All cost involved in uncovering, repairing, replacing, recovering and restoring to design condition, the work that has been covered or concealed will be paid by the contractor involved.

ARTICLE 14 - CONSTRUCTION SUPERVISION AND SCHEDULE

- a. Throughout the progress of the work, each contractor shall keep at the job site, a competent superintendent and supervisory staff satisfactory to the designer and the owner. The superintendent and supervisory staff shall not be changed without the consent of the designer and owner unless said superintendent ceases to be employed by the contractor or ceases to be competent as determined by the contractor, designer or owner. The superintendent and other staff designated by the contractor in writing shall have authority to act on behalf of the contractor, and instructions, directions or notices given to him shall be as binding as if given to the contractor. However, directions, instructions, and notices shall be confirmed in writing.
- b. The contractor shall examine and study the drawings and specifications and fully understand the project design, and shall provide constant and efficient supervision to the work. Should he discover any discrepancies of any sort in the drawings or specifications, he shall report them to the designer without delay. He will not be held responsible for discrepancies in the drawings and/or specifications, but shall be held responsible to report them should they become known to him.
- c. All contractors shall be required to cooperate and consult with each other during the construction of this project. Prior to installation of work, all contractors shall jointly prepare coordination drawings, showing locations of various ductworks, piping, motors, pumps, and other mechanical or electrical equipment, in relation to the structure, walls and ceilings. These drawings shall be submitted to the designer through the Project Expediter for information only. Each contractor shall lay out and execute his work to cause the least delay to other contractors. Each contractor shall be financially responsible for any damage to other contractor's work and for undue delay caused to other contractors on the project.
- d. The contractor is required to attend job site progress conferences as called by the designer. The contractor shall be represented at these job progress conferences by both home office and project personnel. These representatives shall have authority to act on behalf of the contractor. These meetings shall be open to subcontractors, material

suppliers and any others who can contribute toward maintaining required job progress. It shall be the principal purpose of these meetings, or conferences, to effect coordination, cooperation and assistance in every practical way toward the end of maintaining progress of the project on schedule and to complete the project within the specified contract time. Each contractor shall be prepared to assess progress of the work as required in his particular contract and to recommend remedial measures for correction of progress as may be appropriate. The designer or his authorized representative shall be the coordinator of the conferences and shall preside as chairman. The contractor shall turn over a copy of his daily reports to the Designer and Owner at the job site progress conference. Owner will determine daily report format.

- e. The contractor(s) shall, employ an engineer or a land surveyor licensed in the State of North Carolina to lay out the work and to establish a bench mark in a location where same will not be disturbed and where direct instruments sights may be taken.
- f. The designer shall designate a Project Expediter on projects involving two or more prime contracts. The Project Expediter shall be designated in the Supplementary General Conditions. The Project Expediter shall have at a minimum the following responsibilities.
 - 1. Prepare the project construction schedule and shall allow all prime contractors (multi-prime contract) and subcontractors (single-prime contract) performing general, plumbing, HVAC, and electrical work equal input into the preparation of the initial construction schedule.
 - 2. Maintain a project progress schedule for all contractors.
 - 3. Give adequate notice to all contractors to ensure efficient continuity of all phases of the work.
 - 4. Notify the designer of any changes in the project schedule.
 - 5. Recommend to the owner whether payment to a contractor shall be approved.
- g. It shall be the responsibility of the Project Expediter to cooperate with and obtain from several prime contractors and subcontractors on the job, their respective work activities and integrate these activities into a project construction schedule in form of a detailed bar chart or Critical Path Method (CPM), schedule. Each prime contractor shall provide work activities within fourteen (14) days of request by the Project Expediter. A “work activity”, for scheduling purposes, shall be any component or contractual requirement of the project requiring at least one (1) day, but not more than fourteen (14) days, to complete or fulfill. The project construction schedule shall graphically show all salient features of the work required to construct the project from start to finish and within the allotted time established in the contract. The time (in days) between the contractor’s early completion and contractual completion dates is part of the project total float time; and shall be used as such, unless amended by a change order. On a multi-prime project, each prime contractor shall review the proposed construction schedule and approve same in writing. The Project Expediter shall submit the proposed construction schedule to the designer for comments. The complete Project construction schedule shall be of the type set forth in the Supplementary General Condition or subparagraph (1) or (2) below, as appropriate:

1. For a project with total contracts of \$500,000 or less, a bar chart schedule will satisfy the above requirement. The schedule shall indicate the estimated starting and completion dates for each major element of the work.
2. For a project with total contracts over \$500,000, a Critical Path Method (CPM) schedule shall be utilized to control the planning and scheduling of the Work. The CPM schedule shall be the responsibility of the Project Expediter and shall be paid for by the Project Expediter.

Bar Chart Schedule: Where a bar chart schedule is required, it shall be time-scaled in weekly increments, shall indicate the estimated starting and completion dates for each major element of the work by trade and by area, level, or zone, and shall schedule dates for all salient features, including but not limited to the placing of orders for materials, submission of shop drawings and other Submittals for approval, approval of shop drawings by designers, the manufacture and delivery of material, the testing and the installation of materials, supplies and equipment, and all Work activities to be performed by the Contractor. The Contractor shall allow sufficient time in his schedule for all commissioning, required inspections and completion of final punchlist(s). Each Work activity will be assigned a time estimate by the Contractor. One day shall be the smallest time unit used.

CPM Schedule: Where a CPM schedule is required, it shall be in time-scaled precedence format using the Project Expediter's logic and time estimates. The CPM schedule shall be drawn or plotted with activities grouped or zoned by Work area or subcontract as opposed to a random (or scattered) format. The CPM schedule shall be time-scaled on a weekly basis and shall be drawn or plotted at a level of detail and logic which will schedule all salient features of the work to be performed by the Contractor. The Contractor shall allow sufficient time in his schedule for all commissioning, required inspections and completion of final punchlist(s).. Each Work activity will be assigned a time estimate by the Contractor. One day shall be the smallest time unit used.

The CPM schedule will identify and describe each activity, state the duration of each activity, the calendar dates for the early and late start and the early and late finish of each activity, and clearly highlight all activities on the critical path. "Total float" and "free float" shall be indicated for all activities. Float time shall not be considered for the exclusive use or benefit of either the Owner or the Contractor, but must be allocated in the best interest of completing the Work within the Contract time. Extensions to the Contract time, when granted by Change Order, will be granted only when equitable time adjustment exceeds the Total Float in the activity or path of activities affected by the change. On contracts with a price over \$2,500,000, the CPM schedule shall also show what part of the Contract Price is attributable to each activity on the schedule, the sum of which for all activities shall equal the total Contract Price.

Early Completion of Project: The Contractor may attempt to complete the project prior to the Contract Completion Date. However, such planned early completion shall be for the Contractor's convenience only and shall not create any additional rights of the Contractor or obligations of the Owner under this Contract, nor shall it change the Time

for Completion or the Contract Completion Date. The Contractor shall not be required to pay liquidated damages to the Owner because of its failure to complete by its planned earlier date. Likewise, the Owner shall not pay the Contractor any additional compensation for early completion nor will the Owner owe the Contractor any compensation should the Owner, its officers, employees, or agents cause the Contractor not to complete earlier than the date required by the Contract Documents.

- h. The proposed project construction schedule shall be presented to the designer no later than fifteen (15) days after written notice to proceed. No application for payment will be processed until this schedule is accepted by the designer and owner.
- i. The approved project construction schedule shall be distributed to all contractors and displayed at the job site by the Project Expediter.
- j. The several contractors shall be responsible for their work activities and shall notify the Project Expediter of any necessary changes or adjustments to their work. The Project Expediter shall maintain the project construction schedule, making biweekly adjustments, updates, corrections, etc., that are necessary to finish the project within the Contract time, keeping all contractors and the designer fully informed. Copy of a bar chart schedule annotated to show the current progress shall be submitted by the Contractor(s) to the designer, along with monthly request for payment. For project requiring CPM schedule, the Contractor shall submit a biweekly report of the status of all activities. The bar chart schedule or status report shall show the actual Work completed to date in comparison with the original Work scheduled for all activities. If any activities of the work of several contractors are behind schedule, the contractor must indicate in writing, what measures will be taken to bring each such activity back on schedule and to ensure that the Contract Completion Date is not exceeded. A plan of action and recovery schedule shall be developed and submitted to the designer by the Project Expediter, when (1) the contractor's report indicates delays, that are in the opinion of the designer or the owner, of sufficient magnitude that the contractor's ability to complete the work by the scheduled completion is brought into question; (2) the updated construction schedule is thirty (30) days behind the planned or baseline schedule and no legitimate time extensions, as determined by the Designer, are in process; and (3) the contractor desires to make changes in the logic (sequencing of work) or the planned duration of future activities of the CPM schedule which, in the opinion of the designer or the owner, are of a major nature. The plan of action, when required shall be submitted to the Owner for review within two (2) business days of the Contractor receiving the Owner's written demand. The recovery schedule, when required, shall be submitted to the Owner within five (5) calendar days of the Contractor's receiving the Owner's written demand. Failure to provide an updated construction schedule or a recovery schedule may be grounds for rejection of payment applications or withholding of funds as set forth in Article 33.
- k. The Project Expediter shall notify each contractor of such events or time frames that are critical to the progress of the job. Such notice shall be timely and reasonable. Should the progress be delayed due to the work of any of the several contractors, it shall be the duty of the Project Expediter to immediately notify the contractor(s) responsible for such delay, the designer, the State Construction Office and other prime contractors. The designer shall determine the contractor(s) who caused the delays and notify the bonding company of the responsible contractor(s) of the delays; and shall make a recommendation to the owner regarding further action.
- l. Designation as Project Expediter entails an additional project control responsibility and does not alter in any way the responsibility of the contractor so designated, nor the

responsibility of the other contractors involved in the project. The project expeditor's Superintendent(s) shall be in attendance at the Project site at all times when work is in progress unless conditions are beyond the control of the Contractor or until termination of the Contract in accordance with the Contract Documents. It is understood that such Superintendent shall be acceptable to the Owner and Designer and shall be the one who will be continued in that capacity for the duration of the project unless he ceases to be on the Contractor's payroll or the Owner otherwise agrees. The Superintendent shall not be employed on any other project for or by the Contractor or by any other entity during the course of the Work. If the Superintendent is employed by the Contractor on another project without the Owner's approval, then the Owner may deduct from the Contractor's monthly general condition costs and amount representing the Superintendent's cost and shall deduct that amount for each month thereafter until the Contractor has the Superintendent back on the Owner's Project full-time.

ARTICLE 15 - SEPARATE CONTRACTS AND CONTRACTOR RELATIONSHIPS

- a. Effective from January 1, 2002, Chapter 143, Article 8, was amended, to allow public contracts to be delivered by the following delivery methods: single-prime, dual (single-prime and separate-prime), construction manager at risk, and alternative contracting method as approved by the State Building Commission. The owner reserves the right to prepare separate specifications, receive separate bids, and award separate contracts for such other major items of work as may be in the best interest of the State. For the purposes of a single prime contract, refer to Article 1 – Definitions.
- b. All contractors shall cooperate with each other in the execution of their work, and shall plan their work in such manner as to avoid conflicting schedules or delay of the work. See Article 14, Construction Supervision.
- c. If any part of contractor's work depends upon the work of another contractor, defects which may affect that work shall be reported to the designer in order that prompt inspection may be made and the defects corrected. Commencement of work by a contractor where such condition exists will constitute acceptance of the other contractor's work as being satisfactory in all respects to receive the work commenced, except as to defects which may later develop. The designer shall be the judge as to the quality of work and shall settle all disputes on the matter between contractors.
- d. Any mechanical or electrical work such as sleeves, inserts, chases, openings, penetrations, etc., which is located in the work of the general contractor shall be built in by the general contractor. The respective mechanical and electrical contractors shall set all sleeves, inserts and other devices that are to be incorporated into the structure in cooperation and under the supervision of the general contractor. The responsibility for the exact location of such items shall be that of the mechanical and/or electrical contractor.
- e. The designer and the owner shall have access to the work whenever it is in preparation and progress and during normal working hours. The contractor shall provide facilities for such access so the designer may perform his functions under the contract documents.
- f. Should a contractor cause damage to the work or property of another contractor, he shall be directly responsible, and upon notice, shall promptly settle the claim or otherwise resolve the dispute.

ARTICLE 16 - SUBCONTRACTS AND SUBCONTRACTORS

- a. Within thirty (30) days after award of the contract, the contractor shall submit to the designer, owner and to the State Construction Office a list giving the names and addresses of subcontractors and equipment and material suppliers he proposes to use, together with the scope of their respective parts of the work. Should any subcontractor be disapproved by the designer or owner, the designer or owner shall submit his reasons for disapproval in writing to the State Construction Office for its consideration with a copy to the contractor. If the State Construction Office concurs with the designer's or owner's recommendation, the contractor shall submit a substitute for approval. The designer and owner shall act promptly in the approval of subcontractors, and when approval of the list is given, no changes of subcontractors will be permitted except for cause or reason considered justifiable by the designer or owner.
- b. The designer will furnish to any subcontractor, upon request, evidence regarding amounts of money paid to the contractor on account of the subcontractor's work.
- c. The contractor is and remains fully responsible for his own acts or omissions as well as those of any subcontractor or of any employee of either. The contractor agrees that no contractual relationship exists between the subcontractor and the owner in regard to the contract, and that the subcontractor acts on this work as an agent or employee of the contractor.
- d. The owner reserves the right to limit the amount of portions of work to be subcontracted as hereinafter specified.

ARTICLE 17 - CONTRACTOR AND SUBCONTRACTOR RELATIONSHIPS

The contractor agrees that the terms of these contract documents shall apply equally to each subcontractor as to the contractor, and the contractor agrees to take such action as may be necessary to bind each subcontractor to these terms. The contractor further agrees to conform to the Code of Ethical Conduct as adopted by the Associated General Contractors of America, Inc., with respect to contractor-subcontractor relationships, and that payments to subcontractors shall be made in accordance with the provisions of G.S. 143-134.1 titled Interest on final payments due to prime contractors: payments to subcontractors.

- a. On all public construction contracts which are let by a board or governing body of the state government or any political subdivision thereof, except contracts let by the Department of Transportation pursuant to G.S. 136-28.1, the balance due prime contractors shall be paid in full within 45 days after respective prime contracts of the project have been accepted by the owner, certified by the architect, engineer or designer to be completed in accordance with terms of the plans and specifications, or occupied by the owner and used for the purpose for which the project was constructed, whichever occurs first. Provided, however, that whenever the architect or consulting engineer in charge of the project determines that delay in completion of the project in accordance with terms of the plans and specifications is the fault of the contractor, the project may be occupied and used for the purposes for which it was constructed without payment of any interest on amounts withheld past the 45 day limit. No payment shall be delayed because of the failure of another prime contractor on such project to complete his contract. Should final payment to any prime contractor beyond the date such contracts have been certified to be completed by the designer or architect, accepted by the owner, or occupied by the owner and used for the purposes for which the project was constructed, be delayed by more than 45 days, said prime contractor shall be paid interest, beginning on the 46th day, at the rate of one percent (1%) per month or fraction thereof unless a lower rate is

agreed upon on such unpaid balance as may be due. In addition to the above final payment provisions, periodic payments due a prime contractor during construction shall be paid in accordance with the payment provisions of the contract documents or said prime contractor shall be paid interest on any such unpaid amount at the rate stipulated above for delayed final payments. Such interest shall begin on the date the payment is due and continue until the date on which payment is made. Such due date may be established by the terms of the contract. Funds for payment of such interest on state-owned projects shall be obtained from the current budget of the owning department, institution or agency. Where a conditional acceptance of a contract exists, and where the owner is retaining a reasonable sum pending correction of such conditions, interest on such reasonable sum shall not apply.

- b. Within seven days of receipt by the prime contractor of each periodic or final payment, the prime contractor shall pay the subcontractor based on work completed or service provided under the subcontract. Should any periodic or final payment to the subcontractor be delayed by more than seven days after receipt of periodic or final payment by the prime contractor, the prime contractor shall pay the subcontractor interest, beginning on the eighth day, at the rate of one percent (1%) per month or fraction thereof on such unpaid balance as may be due.
- c. The percentage of retainage on payments made by the prime contractor to the subcontractor shall not exceed the percentage of retainage on payments made by the owner to the prime contractor. Any percentage of retainage on payments made by the prime contractor to the subcontractor that exceeds the percentage of retainage on payments made by the owner to the prime contractor shall be subject to interest to be paid by the prime contractor to the subcontractor at the rate of one percent (1%) per month or fraction thereof.
- d. Nothing in this section shall prevent the prime contractor at the time of application and certification to the owner from withholding application and certification to the owner for payment to the subcontractor for unsatisfactory job progress; defective construction not remedied; disputed work; third-party claims filed or reasonable evidence that claim will be filed; failure of subcontractor to make timely payments for labor, equipment and materials; damage to prime contractor or another subcontractor; reasonable evidence that subcontract cannot be completed for the unpaid balance of the subcontract sum; or a reasonable amount for retainage not to exceed the initial percentage retained by owner.

ARTICLE 18 - DESIGNER'S STATUS

- a. The designer shall provide general administration of the performance of construction contracts, including liaison and necessary inspection of the work to ensure compliance with plans and specifications. He is the agent of the owner only for the purpose of constructing this work and to the extent stipulated in the contract documents. He has authority to direct work to be performed, to stop work, to order work removed, or to order corrections of faulty work, where any such action by the designer may be necessary to assure successful completion of the work.
- b. The designer is the impartial interpreter of the contract documents, and, as such, he shall exercise his powers under the contract to enforce faithful performance by both the owner and the contractor, taking sides with neither.
- c. Should the designer cease to be employed on the work for any reason whatsoever, then the owner shall employ a competent replacement who shall assume the status of the former designer.

- d. The designer and his consultants will make inspections of the project. He will inspect the progress, the quality and the quantity of the work.
- e. The designer and the owner shall have access to the work whenever it is in preparation and progress during normal working hours. The contractor shall provide facilities for such access so the designer and owner may perform their functions under the contract documents.
- f. Based on the designer's inspections and evaluations of the project, the designer shall issue interpretations, directives and decisions as may be necessary to administer the project. His decisions relating to artistic effect and technical matters shall be final, provided such decisions are within the limitations of the contract.

ARTICLE 19 - CHANGES IN THE WORK

- a. The owner may have changes made in the work covered by the contract. These changes will not invalidate and will not relieve or release the contractor from any guarantee given by him pertinent to the contract provisions. These changes will not affect the validity of the guarantee bond and will not relieve the surety or sureties of said bond. All extra work shall be executed under conditions of the original contract.
- b. Except in an emergency endangering life or property, no change shall be made by the contractor except upon receipt of approved change order or written field order from the designer, countersigned by the owner and the state construction office authorizing such change. No claim for adjustments of the contract price shall be valid unless this procedure is followed.

A field order, transmitted by fax, electronically, or hand delivered, may be used where the change involved impacts the critical path of the work. A formal change order shall be issued as expeditiously as possible.

In the event of emergency endangering life or property, the contractor may be directed to proceed on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the designer or owner, a correct account of costs together with all proper invoices, payrolls and supporting data. Upon completion of the work the change order will be prepared as outlined under either Method "c(1)" or Method "c(2)" or both.

- c. In determining the values of changes, either additive or deductive, contractors are restricted to the use of the following methods:
 - 1. Where the extra work involved is covered by unit prices quoted in the proposal, or subsequently agreed to by the Contractor, Designer, Owner and State Construction Office the value of the change shall be computed by application of unit prices based on quantities, estimated or actual as agreed of the items involved, except in such cases where a quantity exceeds the estimated quantity allowance in the contract by one hundred percent (100%) or more. In such cases, either party may elect to proceed under subparagraph c2 herein. If neither party elects to proceed under c2, then unit prices shall apply.
 - 2. The contracting parties shall negotiate and agree upon the equitable value of the change prior to issuance of the change order, and the change order shall stipulate the corresponding lump sum adjustment to the contract price.

- d. Under Paragraph "b" and Methods "c(2)" above, the allowances for overhead and profit combined shall be as follows: all contractors (the single contracting entity (prime), his subcontractors (1st tier subs), or their sub-subcontractors (2nd tier subs, 3rd tier subs, etc)) shall be allowed a maximum of 10% on work they each self-perform; the prime contractor shall be allowed a maximum of 5% on contracted work of his 1st tier sub; 1st tier, 2nd tier, 3rd tier, etc contractors shall be allowed a maximum of 2.5% on the contracted work of their subs. ; Under Method "c(1)", no additional allowances shall be made for overhead and profit. In the case of deductible change orders, under Method "c(2)" and Paragraph (b) above, the contractor shall include no less than five percent (5%) profit, but no allowances for overhead.
- e. The term "net cost" as used herein shall mean the difference between all proper cost additions and deductions. The "cost" as used herein shall be limited to the following:
1. The actual costs of materials and supplies incorporated or consumed as part of the work;
 2. The actual costs of labor expended on the project site; labor expended in coordination, change order negotiation, record document maintenance, shop drawing revision or other tasks necessary to the administration of the project are considered overhead whether they take place in an office or on the project site.
 3. The actual costs of labor burden, limited to the costs of social security (FICA) and Medicare/Medicaid taxes; unemployment insurance costs; health/dental/vision insurance premiums; paid employee leave for holidays, vacation, sick leave, and/or petty leave, not to exceed a total of 30 days per year; retirement contributions; worker's compensation insurance premiums; and the costs of general liability insurance when premiums are computed based on payroll amounts; the total of which shall not exceed thirty percent (30%) of the actual costs of labor;
 4. The actual costs of rental for tools, excluding hand tools; equipment; machinery; and temporary facilities required for the work;
 5. The actual costs of premiums for bonds, insurance, permit fees, and sales or use taxes related to the work.
- Overtime and extra pay for holidays and weekends may be a cost item only to the extent approved by the owner.
- f. Should concealed conditions be encountered in the performance of the work below grade, or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the contract documents, the contract sum and time for completion may be equitably adjusted by change order upon claim by either party made within thirty (30) days after the condition has been identified. The cost of such change shall be arrived at by one of the foregoing methods. All change orders shall be supported by a unit cost breakdown showing method of arriving at net cost as defined above.
- g. In all change orders, the procedure will be for the designer to request proposals for the change order work in writing. The contractor will provide such proposal and supporting data in suitable format. The designer shall verify correctness. Delay in the processing of the change order due to lack of proper submittal by the contractor of all required supporting data shall not constitute grounds for a time extension or basis of a claim. Within fourteen (14) days after receipt of the contractor's accepted proposal including all supporting documentation required by the designer, the designer shall prepare the change order and forward to the contractor for his signature or otherwise respond, in writing, to

the contractor's proposal. Within seven (7) days after receipt of the change order executed by the contractor, the designer shall, certify the change order by his signature, and forward the change order and all supporting data to the owner for the owner's signature. The owner shall execute the change order and forward to the State Construction Office for final approval, within seven (7) days of receipt. The State Construction Office shall act on the change order within seven (7) days. In case of emergency or extenuating circumstances, approval of changes may be obtained verbally by telephone or field orders approved by all parties, then shall be substantiated in writing as outlined under normal procedure.

- h. At the time of signing a change order, the contractor shall be required to certify as follows:

"I certify that my bonding company will be notified forthwith that my contract has been changed by the amount of this change order, and that a copy of the approved change order will be mailed upon receipt by me to my surety."

- i. A change order, when issued, shall be full compensation, or credit, for the work included, omitted or substituted. It shall show on its face the adjustment in time for completion of the project as a result of the change in the work.
- j. If, during the progress of the work, the owner requests a change order and the contractor's terms are unacceptable, the owner, with the approval of the State Construction Office, may require the contractor to perform such work on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the Designer or owner, a correct account of cost together with all proper invoices, payrolls and supporting data. Upon completion of the work a change order will be prepared with allowances for overhead and profit per paragraph d. above and "net cost" and "cost" per paragraph e. above. Without prejudice, nothing in this paragraph shall preclude the owner from performing or to have performed that portion of the work requested in the change order.

ARTICLE 20 - CLAIMS FOR EXTRA COST

- a. Should the contractor consider that as a result of instructions given by the designer, he is entitled to extra cost above that stated in the contract, he shall give written notice thereof to the designer within seven (7) days without delay. The written notice shall clearly state that a claim for extra cost is being made and shall provide a detailed justification for the extra cost. The contractor shall not proceed with the work affected until further advised, except in emergency involving the safety of life or property, which condition is covered in Article 19(b) and Article 11(h). No claims for extra compensation shall be considered unless the claim is so made. The designer shall render a written decision within seven (7) days of receipt of claim.
- b. The contractor shall not act on instructions received by him from persons other than the designer, and any claims for extra compensation or extension of time on account of such instruction will not be honored. The designer shall not be responsible for misunderstandings claimed by the contractor of verbal instructions which have not been confirmed in writing, and in no case shall instructions be interpreted as permitting a departure from the contract documents unless such instruction is confirmed in writing and supported by a properly authorized change order.
- c. Should a claim for extra compensation that complies with the requirements of (a) above by the contractor and is denied by the designer or owner, and cannot be resolved by a

representative of the State Construction Office, the contractor may request a mediation in connection with GS 143-128(f1) in the dispute resolution rules adopted by the State Building Commission (1 N.C.A.C. 30H .0101 through .1001). If the contractor is unable to resolve its claim as a result of mediation, the contractor may pursue the claim in accordance with the provisions of G.S. 143-135.3, or G.S. 143-135.6 where Community Colleges are the owner, and the following:

1. A contractor who has not completed a contract with a board for construction or repair work and who has not received the amount he claims is due under the contract may submit a verified written claim to the director of the State Construction Office of the Department of Administration for the amount the contractor claims is due. The director may deny, allow or compromise the claim, in whole or in part. A claim under this subsection is not a contested case under Chapter 150B of the General Statutes.
2.
 - (a) A contractor who has completed a contract with a board for construction or repair work and who has not received the amount he claims is due under the contract may submit a verified written claim to the director of the State Construction Office of the Department of Administration for the amount the contractor claims is due. The claim shall be submitted within sixty (60) days after the contractor receives a final statement of the board's disposition of his claim and shall state the factual basis for the claim.
 - (b) The director shall investigate a submitted claim within ninety (90) days of receiving the claim, or within any longer time period upon which the director and the contractor agree. The contractor may appear before the director, either in person or through counsel, to present facts and arguments in support of his claim. The director may allow, deny or compromise the claim, in whole or in part. The director shall give the contractor a written statement of the director's decision on the contractor's claim.
 - (c) A contractor who is dissatisfied with the director's decision on a claim submitted under this subsection may commence a contested case on the claim under Chapter 150B of the General Statutes. The contested case shall be commenced within sixty (60) days of receiving the director's written statement of the decision.
 - (d) As to any portion of a claim that is denied by the director, the contractor may, in lieu of the procedures set forth in the preceding subsection of this section, within six (6) months of receipt of the director's final decision, institute a civil action for the sum he claims to be entitled to under the contract by filing a verified complaint and the issuance of a summons in the Superior Court of Wake County or in the superior court of any county where the work under the contract was performed. The procedure shall be the same as in all civil actions except that all issues shall be tried by the judge, without a jury.

ARTICLE 21 - MINOR CHANGES IN THE WORK

The designer will have the authority to order minor changes in the work not involving an adjustment in the contract sum or time for completion, and not inconsistent with the intent of the contract documents. Such changes shall be effected by written order, copied to the State Construction Office, and shall be binding on the owner and the contractor.

ARTICLE 22 - UNCORRECTED FAULTY WORK

Should the correction of faulty or damaged work be considered inadvisable or inexpedient by the owner and the designer, the owner shall be reimbursed by the contractor. A change order will be issued to reflect a reduction in the contract sum.

ARTICLE 23 - TIME OF COMPLETION, DELAYS, EXTENSION OF TIME

- a. The time of completion is stated in the Supplementary General Conditions and in the Form of Construction Contract. The Project Expediter, upon notice of award of contract, shall prepare a construction schedule to complete the project within the time of completion as required by Article 14.
- b. The contractors shall commence work to be performed under this agreement on a date to be specified in a written Notice to Proceed from the designer and shall fully complete all work hereunder within the time of completion stated. Time is of the essence and the contractor acknowledges the Owner will likely suffer financial damage for failure to complete the work within the time of completion. For each day in excess of the above number of days, the contractor(s) shall pay the owner the sum stated as liquidated damages reasonably estimated in advance to cover the losses to be incurred by the owner by reason of failure of said contractor(s) to complete the work within the time specified, such time being in the essence of this contract and a material consideration thereof.
- c. In the event of multiple prime contractors, the designer shall be the judge as to the division of responsibility between the contractor(s), based on the construction schedule, weekly reports and job records, and shall apportion the amount of liquidated damages to be paid by each of them, according to delay caused by any or all of them.
- d. If the contractor is delayed at any time in the progress of his work solely by any act or negligence of the owner, the designer, or by any employee of either; by any separate contractor employed by the owner; by changes ordered in the work; by labor disputes at the project site; by abnormal weather conditions not reasonably anticipated for the locality where the work is performed; by unavoidable casualties; by any causes beyond the contractor's control; or by any other causes which the designer and owner determine may justify the delay, then the contract time may be extended by change order only for the time which the designer and owner may determine is reasonable.

Time extensions will not be granted for rain, wind, snow or other natural phenomena of normal intensity for the locality where work is performed. For purpose of determining extent of delay attributable to unusual weather phenomena, a determination shall be made by comparing the weather for the contract period involved with the average of the preceding five (5) year climatic range during the same time interval based on the National Oceanic and Atmospheric Administration National Weather Service statistics for the locality where work is performed and on daily weather logs kept on the job site by the contractor reflecting the effect of the weather on progress of the work and initialed by the designer's representative. No weather delays shall be considered after the building is dried in unless work claimed to be delayed is on the critical path of the baseline schedule or approved updated schedule. Time extensions for weather delays, acts of God, labor disputes, fire, delays in transportation, unavoidable casualties or other delays which are beyond the control of the Owner do not entitle the Contractor to compensable damages for delays. Any contractor claim for compensable damages for delays is limited to delays caused solely by the owner or its agents. Contractor caused delays shall be accounted for before owner or designer caused delays in the case of concurrent delays.

- e. Request for extension of time shall be made in writing to the designer, copies to the owner and SCO, within twenty (20) days following cause of delay. In case of continuing cause for delay, the Contractor shall notify the Designer to the designer, copies to the owner and SCO, of the delay within 20 days of the beginning of the delay and only one claim is necessary.
- f. The contractor shall notify his surety in writing of extension of time granted.
- g. No claim for time extension shall be allowed on account of failure of the designer to furnish drawings or instructions until twenty (20) days after demand for such drawings and/or instructions. See Article 5c. Demand must be in written form clearly stating the potential for delay unless the drawings or instructions are provided. Any delay granted will begin after the twenty (20) day demand period is concluded.

ARTICLE 24 - PARTIAL UTILIZATION/BENEFICIAL OCCUPANCY

- a. The owner may desire to occupy or utilize all or a portion of the project prior to the completion of the project.
- b. Should the owner request a utilization of a building or portion thereof, the designer shall perform a designer final inspection of area after being notified by the contractor that the area is ready for such. After the contractor has completed designer final inspection punch list and the designer has verified, then the designer shall schedule a beneficial occupancy inspection at a time and date acceptable to the owner, contractor(s) and State Construction Office. If beneficial occupancy is granted by the State Construction Office, in such areas the following will be established:
 - 1. The beginning of guarantees and warranties period for the equipment necessary to support. in the area.
 - 2. The owner assumes all responsibilities for utility costs for entire building.
 - 2. Contractor will obtain consent of surety.
 - 3. Contractor will obtain endorsement from insurance company permitting beneficial occupancy.
- c. The owner shall have the right to exclude the contractor from any part of the project which the designer has so certified to be substantially complete, but the owner will allow the contractor reasonable access to complete or correct work to bring it into compliance with the contract.
- d. Occupancy by the owner under this article will in no way relieve the contractor from his contractual requirement to complete the project within the specified time. The contractor will not be relieved of liquidated damages because of beneficial occupancy. The designer may prorate liquidated damages based on the percentage of project occupied.

ARTICLE 25 - FINAL INSPECTION, ACCEPTANCE, AND PROJECT CLOSEOUT

- a. Upon notification from the contractor(s) that the project is complete and ready for inspection, the designer shall make a Designer final inspection to verify that the project is complete and ready for SCO final inspection. Prior to SCO final inspection, the contractor(s) shall complete all items requiring corrective measures noted at the Designer

final inspection. The designer shall schedule a SCO final inspection at a time and date acceptable to the owner, contractor(s) and State Construction Office.

- b. At the SCO final inspection, the designer and his consultants shall, if job conditions warrant, record a list of items that are found to be incomplete or not in accordance with the contract documents. At the conclusion of the SCO final inspection, the designer and State Construction Office representative shall make one of the following determinations:
 - 1. That the project is completed and accepted.
 - 2. That the project will be accepted subject to the correction of the list of discrepancies (punch list). All punch list items must be completed within thirty (30) days of SCO final inspection or the owner may invoke Article 28, Owner's Right to Do Work.
 - 4. That the project is not complete and another date for a SCO final inspection will be established.
- c. Within fourteen (14) days of final acceptance per Paragraph b1 or within fourteen (14) days after completion of punch list per Paragraph b2 above, the designer shall certify the work and issue applicable certificate(s) of compliance.
- d. Any discrepancies listed or discovered after the date of SCO final inspection and acceptance under Paragraphs b1 or b2 above shall be handled in accordance with Article 42, Guarantee.
- f. The final acceptance date will establish the following:
 - 1. The beginning of guarantees and warranties period.
 - 2. The date on which the contractor's insurance coverage for public liability, property damage and builder's risk may be terminated.
 - 3. That no liquidated damages (if applicable) shall be assessed after this date.
 - 4. The termination date of utility cost to the contractor.
- g. **Prior to issuance of final acceptance date, the contractor shall have his authorized representatives visit the project and give full instructions to the designated personnel regarding operating, maintenance, care, and adjustment of all equipment and special construction elements. In addition, the contractor shall provide to the owner a complete instructional video (media format acceptable to the owner) on the operation, maintenance, care and adjustment of all equipment and special construction elements.**

ARTICLE 26 - CORRECTION OF WORK BEFORE FINAL PAYMENT

- a. Any work, materials, fabricated items or other parts of the work which have been condemned or declared not in accordance with the contract by the designer shall be promptly removed from the work site by the contractor, and shall be immediately replaced by new work in accordance with the contract at no additional cost to the owner. Work or property of other contractors or the owner, damaged or destroyed by virtue of such faulty work, shall be made good at the expense of the contractor whose work is faulty.

- b. Correction of condemned work described above shall commence within twenty-four (24) hours after receipt of notice from the designer, and shall make satisfactory progress, as determined by the designer, until completed.
- c. Should the contractor fail to proceed with the required corrections, then the owner may complete the work in accordance with the provisions of Article 28.

ARTICLE 27 - CORRECTION OF WORK AFTER FINAL PAYMENT

See Article 35, Performance Bond and Payment Bond, and Article 42, Guarantee. Neither the final certificate, final payment, occupancy of the premises by the owner, nor any provision of the contract, nor any other act or instrument of the owner, nor the designer, shall relieve the contractor from responsibility for negligence, or faulty material or workmanship, or failure to comply with the drawings and specifications. Contractor shall correct or make good any defects due thereto and repair any damage resulting there from, which may appear during the guarantee period following final acceptance of the work except as stated otherwise under Article 42, Guarantee. The owner will report any defects as they may appear to the contractor and establish a time limit for completion of corrections by the contractor. The owner will be the judge as to the responsibility for correction of defects.

ARTICLE 28 - OWNER'S RIGHT TO DO WORK

If, during the progress of the work or during the period of guarantee, the contractor fails to prosecute the work properly or to perform any provision of the contract, the owner, after seven (7) days' written notice sent by certified mail, return receipt requested, to the contractor from the designer, may perform or have performed that portion of the work. The cost of the work may be deducted from any amounts due or to become due to the contractor, such action and cost of same having been first approved by the designer. Should the cost of such action of the owner exceed the amount due or to become due the contractor, then the contractor or his surety, or both, shall be liable for and shall pay to the owner the amount of said excess.

ARTICLE 29 - ANNULMENT OF CONTRACT

If the contractor fails to begin the work under the contract within the time specified, or the progress of the work is not maintained on schedule, or the work is not completed within the time above specified, or fails to perform the work with sufficient workmen and equipment or with sufficient materials to ensure the prompt completion of said work, or shall perform the work unsuitably or shall discontinue the prosecution of the work, or if the contractor shall become insolvent or be declared bankrupt or commit any act of bankruptcy or insolvency, or allow any final judgment to stand against him unsatisfied for a period of forty-eight (48) hours, or shall make an assignment for the benefit of creditors, or for any other cause whatsoever shall not carry on the work in an acceptable manner, the owner may give notice in writing, sent by certified mail, return receipt requested, to the contractor and his surety of such delay, neglect or default, specifying the same, and if the contractor within a period of seven (7) days after such notice shall not proceed in accordance therewith, then the owner shall, declare this contract in default, and, thereupon, the surety shall promptly take over the work and complete the performance of this contract in the manner and within the time frame specified. In the event the surety shall fail to take over the work to be done under this contract within seven (7) days after being so notified and notify the owner in writing, sent by certified mail, return receipt requested, that he is taking the same over and stating that he will diligently pursue and complete the same, the owner shall have full power and authority, without violating the contract, to take the prosecution of the work out of the hands of said contractor, to appropriate or use any or all contract materials and equipment on the grounds as may be suitable and acceptable and may enter into an agreement, either by public letting or negotiation, for the completion of said contract according to the terms and provisions thereof

or use such other methods as in his opinion shall be required for the completion of said contract in an acceptable manner. All costs and charges incurred by the owner, together with the costs of completing the work under contract, shall be deducted from any monies due or which may become due said contractor and surety. In case the expense so incurred by the owner shall be less than the sum which would have been payable under the contract, if it had been completed by said contractor, then the said contractor and surety shall be entitled to receive the difference, but in case such expense shall exceed the sum which would have been payable under the contract, then the contractor and the surety shall be liable and shall pay to the owner the amount of said excess.

ARTICLE 30 - CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE THE CONTRACT

- a. Should the work be stopped by order of a court having jurisdiction, or by order of any other public authority for a period of three months, due to cause beyond the fault or control of the contractor, or if the owner should fail or refuse to make payment on account of a certificate issued by the designer within forty-five (45) days after receipt of same, then the contractor, after fifteen (15) days' written notice sent by certified mail, return receipt requested, to the owner and the designer, may suspend operations on the work or terminate the contract.
- b. The owner shall be liable to the contractor for the cost of all materials delivered and work performed on this contract plus 10 percent overhead and profit and shall make such payment. The designer shall be the judge as to the correctness of such payment.

ARTICLE 31 - REQUEST FOR PAYMENT

- a. Not later than the fifth day of the month, the contractor shall submit to the designer a request for payment for work done during the previous month. The request shall be in the form agreed upon between the contractor and the designer, but shall show substantially the value of work done and materials delivered to the site during the period since the last payment, and shall sum up the financial status of the contract with the following information:
 1. Total of contract including change orders.
 2. Value of work completed to date.
 3. Less five percent (5%) retainage, provided however, that after fifty percent (50%) of the contractor's work has been satisfactorily completed on schedule, with approval of the owner and the State Construction Office and written consent of the surety, further requirements for retainage will be waived only so long as work continues to be completed satisfactorily and on schedule.
 4. Less previous payments.
 5. Current amount due.
- b. The contractor, upon request of the designer, shall substantiate the request with invoices of vouchers or payrolls or other evidence.
- c. Prior to submitting the first request, the contractor shall prepare for the designer a schedule showing a breakdown of the contract price into values of the various parts of the work, so arranged as to facilitate payments to subcontractors in accordance with Article 17, Contractor and Subcontractor Relationships. The contractor(s) shall list the

value of each subcontractor and supplier, identifying each minority business subcontractor and supplier as listed in Affidavit C, if applicable.

- d. When payment is made on account of stored materials and equipment, such materials must be stored on the owner's property, and the requests for payments shall be accompanied by invoices or bills of sale or other evidence to establish the owner's title to such materials and equipment. Such payments will be made only for materials that have been customized or fabricated specifically for this project. Raw materials or commodity products including but not limited to piping, conduit, CMU, metal studs and gypsum board may not be submitted. Responsibility for such stored materials and equipment shall remain with the contractor regardless of ownership title. Such stored materials and equipment shall not be removed from the owner's property. Should the space for storage on-site be limited, the contractor, at his option, shall be permitted to store such materials and/or equipment in a suitable space off-site. Should the contractor desire to include any such materials or equipment in his application for payment, they must be stored in the name of the owner in an independent, licensed, bonded warehouse approved by the designer, owner and the State Construction Office and located as close to the site as possible. The warehouse selected must be approved by the contractor's bonding and insurance companies; the material to be paid for shall be assigned to the owner and shall be inspected by the designer. Upon approval by the designer, owner and SCO of the storage facilities and materials and equipment, payment therefore will be certified. Responsibility for such stored materials and equipment shall remain with the contractor. Such stored materials and equipment shall not be moved except for transportation to the project site. Under certain conditions, the designer may approve storage of materials at the point of manufacture, which conditions shall be approved by the designer, the owner and the State Construction Office prior to approval for the storage and shall include an agreement by the storing party which unconditionally gives the State absolute right to possession of the materials at anytime. Bond, security and insurance protection shall continue to be the responsibility of the contractor(s).
- e. In the event of beneficial occupancy, retainage of funds due the contractor(s) may be reduced with the approval of the State Construction Office to an equitable amount to cover the list of items to be completed or corrected. Retainage may not be reduced to less than two and one-half (2 1/2) times the estimated value of the work to be completed or corrected. Reduction of retainage must be with the consent and approval of the contractor's bonding company.

ARTICLE 32 - CERTIFICATES OF PAYMENT AND FINAL PAYMENT

- a. Within five (5) days from receipt of request for payment from the contractor, the designer shall issue and forward to the owner a certificate for payment. This certificate shall indicate the amount requested or as approved by the designer. If the certificate is not approved by the designer, he shall state in writing to the contractor and the owner his reasons for withholding payment.
- b. No certificate issued or payment made shall constitute an acceptance of the work or any part thereof. The making and acceptance of final payment shall constitute a waiver of all claims by the owner except:
 - 1. Claims arising from unsettled liens or claims against the contractor.
 - 2. Faulty work or materials appearing after final payment.
 - 3. Failure of the contractor to perform the work in accordance with drawings and specifications, such failure appearing after payment.

4. As conditioned in the performance bond and payment bond.
- c. The making and acceptance of final payment shall constitute a waiver of all claims by the contractor except those claims previously made and remaining unsettled (Article 20(c)).
- d. Prior to submitting request for final payment to the designer for approval, the contractor shall fully comply with all requirements specified in the “project closeout” section of the specifications. These requirements include but not limited to the following:
 1. Submittal of Product and Operating Manuals, Warranties and Bonds, Guarantees, Maintenance Agreements, As-Built Drawings, Certificates of Inspection or Approval from agencies having jurisdiction. (The designer must approve the Manuals prior to delivery to the owner).
 2. Transfer of Required attic stock material and all keys in an organized manner.
 3. Record of Owner’s training.
 4. Resolution of any final inspection discrepancies.
 5. Granting access to Contractor’s records, if Owner’s internal auditors have made a request for such access pursuant to Article 52.
- e. The contractor shall forward to the designer, the final application for payment along with the following documents:
 1. List of minority business subcontractors and material suppliers showing breakdown of contract amounts and total actual payments to subs and material suppliers.
 2. Affidavit of Release of Liens.
 3. Affidavit of contractors of payment to material suppliers and subcontractors. (See Article 36).
 4. Consent of Surety to Final Payment.
 5. Certificates of state agencies required by state law.
- f. The designer will not authorize final payment until the work under contract has been certified by designer, certificates of compliance issued, and the contractor has complied with the closeout requirements. The designer shall forward the contractor’s final application for payment to the owner along with respective certificate(s) of compliance required by law.

ARTICLE 33 - PAYMENTS WITHHELD

- a. The designer with the approval of the State Construction Office may withhold payment for the following reasons:
 1. Faulty work not corrected.

2. The unpaid balance on the contract is insufficient to complete the work in the judgment of the designer.
 3. To provide for sufficient contract balance to cover liquidated damages that will be assessed.
- b. The secretary of the Department of Administration may authorize the withholding of payment for the following reasons:
 1. Claims filed against the contractor or evidence that a claim will be filed.
 2. Evidence that subcontractors have not been paid.
 - c. The Owner may withhold all or a portion of Contractor's general conditions costs set forth in the approved schedule of values, if Contractor has failed to comply with: (1) a request to access its records by Owner's internal auditors pursuant to Article 52; (2) a request for a plan of action and/or recovery schedule under Article 14.j or provide The Owner; (3) a request to provide an electronic copies of Contractor's baseline schedule, updates with all logic used to create the schedules in the original format of the scheduling software; and (4) Contractor's failure to have its Superintendent on the Project full-time; (
 - d. When grounds for withholding payments have been removed, payment will be released. Delay of payment due the contractor without cause will make owner liable for payment of interest to the contractor in accordance with G.S. 143-134.1. As provided in G.S.143-134.1(e) the owner shall not be liable for interest on payments withheld by the owner 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.

ARTICLE 34 - MINIMUM INSURANCE REQUIREMENTS

The work under this contract shall not commence until the contractor has obtained all required insurance and verifying certificates of insurance have been approved in writing by the owner. These certificates shall document that coverages afforded under the policies will not be cancelled, reduced in amount or coverages eliminated until at least thirty (30) days after mailing written notice, by certified mail, return receipt requested, to the insured and the owner of such alteration or cancellation. If endorsements are needed to comply with the notification or other requirements of this article copies of the endorsements shall be submitted with the certificates.

a. Worker's Compensation and Employer's Liability

The contractor shall provide and maintain, until final acceptance, workmen's compensation insurance, as required by law, as well as employer's liability coverage with minimum limits of \$100,000.

b. Public Liability and Property Damage

The contractor shall provide and maintain, until final acceptance, comprehensive general liability insurance, including coverage for premises operations, independent contractors, completed operations, products and contractual exposures, as shall protect such contractors from claims arising out of any bodily injury, including accidental death, as well as from claims for property damages which may arise from operations under this contract, whether such operations be by the contractor or by any subcontractor, or by

anyone directly or indirectly employed by either of them and the minimum limits of such insurance shall be as follows:

Bodily Injury:	\$500,000 per occurrence
Property Damage:	\$100,000 per occurrence / \$300,000 aggregate

In lieu of limits listed above, a \$500,000 combined single limit shall satisfy both conditions.

Such coverage for completed operations must be maintained for at least two (2) years following final acceptance of the work performed under the contract.

c. Property Insurance (Builder's Risk/Installation Floater)

The contractor shall purchase and maintain property insurance until final acceptance, upon the entire work at the site to the full insurable value thereof. This insurance shall include the interests of the owner, the contractor, the subcontractors and sub-subcontractors in the work and shall insure against the perils of fire, wind, rain, flood, extended coverage, and vandalism and malicious mischief. If the owner is damaged by failure of the contractor to purchase or maintain such insurance, then the contractor shall bear all reasonable costs properly attributable thereto; the contractor shall effect and maintain similar property insurance on portions of the work stored off the site when request for payment per articles so includes such portions.

d. Deductible

Any deductible, if applicable to loss covered by insurance provided, is to be borne by the contractor.

e. Other Insurance

The contractor shall obtain such additional insurance as may be required by the owner or by the General Statutes of North Carolina including motor vehicle insurance, in amounts not less than the statutory limits.

f. Proof of Carriage

The contractor shall furnish the owner with satisfactory proof of carriage of the insurance required before written approval is granted by the owner.

ARTICLE 35 - PERFORMANCE BOND AND PAYMENT BOND

- a. Each contractor shall furnish a performance bond and payment bond executed by a surety company authorized to do business in North Carolina. The bonds shall be in the full contract amount. Bonds shall be executed in the form bound with these specifications.
- b. All bonds shall be countersigned by an authorized agent of the bonding company who is licensed to do business in North Carolina.

ARTICLE 36 - CONTRACTOR'S AFFIDAVIT

The final payment of retained amount due the contractor on account of the contract shall not become due until the contractor has furnished to the owner through the designer an affidavit signed, sworn and notarized to the effect that all payments for materials, services or subcontracted work in connection with his contract have been satisfied, and that no claims or

liens exist against the contractor in connection with this contract. In the event that the contractor cannot obtain similar affidavits from subcontractors to protect the contractor and the owner from possible liens or claims against the subcontractor, the contractor shall state in his affidavit that no claims or liens exist against any subcontractor to the best of his (the contractor's) knowledge, and if any appear afterward, the contractor shall save the owner harmless.

ARTICLE 37 - ASSIGNMENTS

The contractor shall not assign any portion of this contract nor subcontract in its entirety. Except as may be required under terms of the performance bond or payment bond, no funds or sums of money due or become due the contractor under the contract may be assigned.

ARTICLE 38 - USE OF PREMISES

- a. The contractor(s) shall confine his apparatus, the storage of materials and the operations of his workmen to limits indicated by law, ordinances, permits or directions of the designer and owner and shall not exceed those established limits in his operations.
- b. The contractor(s) shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety.
- c. The contractor(s) shall enforce the designer's and owner's instructions regarding signs, advertisements, fires and smoking.
- d. No firearms, any type of alcoholic beverages, or drugs (other than those prescribed by a physician) will be permitted at the job site.

ARTICLE 39 - CUTTING, PATCHING AND DIGGING

- a. The contractor shall do all cutting, fitting or patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of other contractors shown upon or reasonably implied by the drawings and specifications for the completed structure, as the designer may direct.
- b. Any cost brought about by defective or ill-timed work shall be borne by the party responsible therefor.
- c. No contractor shall endanger any work of another contractor by cutting, digging or other means. No contractor shall cut or alter the work of any other contractor without the consent of the designer and the affected contractor(s).

ARTICLE 40 - UTILITIES, STRUCTURES, SIGNS

- a. The contractor shall provide necessary and adequate facilities for water, electricity, gas, oil, sewer and other utility services which maybe necessary and required for completion of the project including all utilities required for testing, cleaning, balancing, and sterilization of designated plumbing, mechanical and electrical systems. Any permanent meters installed shall be listed in the contractor's name until work has a final acceptance. The contractor will be solely responsible for all utility costs prior to final acceptance. Contractor shall contact all affected utility companies prior to bid to determine their requirements to provide temporary and permanent service and include all costs associated with providing those services in their bid. Coordination of the work of the utility companies during construction is the sole responsibility of the contractor.

- b. Meters shall be relisted in the owner's name on the day following final acceptance of the Project Expediter's work, and the owner shall pay for services used after that date.
- c. The owner shall be reimbursed for all metered utility charges after the meter is relisted in the owner's name and prior to completion and acceptance of the work of **all** contractors. Reimbursement shall be made by the contractor whose work has not been completed and accepted. If the work of two or more contractors has not been completed and accepted, reimbursement to the owner shall be paid by the contractors involved on the basis of assessments by the designer.
- d. Prior to the operation of permanent systems, the Project Expediter will provide temporary power, lighting, water, and heat to maintain space temperature above freezing, as required for construction operations.
- e. All contractors shall have the permanent building systems in sufficient readiness for furnishing temporary climatic control at the time a building is enclosed and secured. The HVAC systems shall maintain climatic control throughout the enclosed portion of the building sufficient to allow completion of the interior finishes of the building. A building shall be considered enclosed and secured when windows, doorways (exterior, mechanical, and electrical equipment rooms), and hardware are installed; and other openings have protection which will provide reasonable climatic control. The appropriate time to start the mechanical systems and climatic condition shall be jointly determined by the contractor(s), the designer and owner. Use of the equipment in this manner shall be subject to the approval of the Designer and owner and shall in no way affect the warranty requirements of the contractor(s).
- f. The electrical contractor shall have the building's permanent power wiring distribution system in sufficient readiness to provide power as required by the HVAC contractor for temporary climatic control.
- g. The electrical contractor shall have the building's permanent lighting system ready at the time the general contractor begins interior painting and shall provide adequate lighting in those areas where interior painting and finishing is being performed.
- h. Each prime contractor shall be responsible for his permanently fixed service facilities and systems in use during progress of the work. The following procedures shall be strictly adhered to:
 - 1. Prior to final acceptance of work by the State Construction Office, each contractor shall remove and replace any parts of the permanent building systems damaged through use during construction.
 - 2. Temporary filters as recommended by the equipment manufacturer in order to keep the equipment and ductwork clean and free of dust and debris shall be installed in each of the heating and air conditioning units and at each return grille during construction. New filters shall be installed in each unit prior to the owner's acceptance of the work.
 - 3. Extra effort shall be maintained to keep the building and the site adjacent to the building clean and under no circumstances shall air systems be operated if finishing and site work operations are creating dust in excess of what would be considered normal if the building were occupied.
 - 4. It shall be understood that any warranty on equipment presented to the owner shall extend from the day of final acceptance by the owner. The cost of warranting the

equipment during operation in the finishing stages of construction shall be borne by the contractor whose system is utilized.

5. The electrical contractor shall have all lamps in proper working condition at the time of final project acceptance.
 - i. The Project Expediter shall provide, if required and where directed, a shed for toilet facilities and shall furnish and install in this shed all water closets required for a complete and adequate sanitary arrangement. These facilities will be available to other contractors on the job and shall be kept in a neat and sanitary condition at all times. Chemical toilets are acceptable.
 - j. The Project Expediter shall, if required by the Supplementary General Conditions and where directed, erect a temporary field office, complete with lights, telephone, heat and air conditioning. A portion of this office shall be partitioned off, of sufficient size, for the use of a resident inspector, should the designer so direct.
 - k. On multi-story construction projects, the Project Expediter shall provide temporary elevators, lifts, or other special equipment for the general use of all contractors. The cost for such elevators, lifts or other special equipment and the operation thereof shall be included in the Project Expediter's bid.
 - l. The Project Expediter will erect one sign on the project if required. The sign shall be of sound construction, and shall be neatly lettered with black letters on white background. The sign shall bear the name of the project, and the names of prime contractors on the project, and the name of the designer and consultants. Directional signs may be erected on the owner's property subject to approval of the owner with respect to size, style and location of such directional signs. Such signs may bear the name of the contractor and a directional symbol. No other signs will be permitted except by permission of the owner.

ARTICLE 41 - CLEANING UP

- a. The contractors shall keep the building and surrounding area reasonably free from rubbish at all times, and shall remove debris from the site on a timely basis or when directed to do so by the designer or Project Expediter. The Project Expediter shall provide an on site refuse container(s) for the use of all contractors. Each contractor shall remove their rubbish and debris from the building on a daily basis. The Project Expediter shall broom clean the building as required to minimize dust and dirt accumulation.
- b. The Project Expediter shall provide and maintain suitable all-weather access to the building.
- c. Before final inspection and acceptance of the building, each contractor shall clean his portion of the work, including glass, hardware, fixtures, masonry, tile and marble (using no acid), clean and wax all floors as specified, and completely prepare the building for use by the owner, with no cleaning required by the owner.

ARTICLE 42 - GUARANTEE

- a. The contractor shall unconditionally guarantee materials and workmanship against patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve (12) months following the date of final acceptance of the work or beneficial occupancy and shall replace such defective materials or workmanship without cost to the owner.

- b. Where items of equipment or material carry a manufacturer's warranty for any period in excess of twelve (12) months, then the manufacturer's warranty shall apply for that particular piece of equipment or material. The contractor shall replace such defective equipment or materials, without cost to the owner, within the manufacturer's warranty period.
- c. Additionally, the owner may bring an action for latent defects caused by the negligence of the contractor which is hidden or not readily apparent to the owner at the time of beneficial occupancy or final acceptance, whichever occurred first, in accordance with applicable law.
- d. Guarantees for roof, equipment, materials, and supplies shall be stipulated in the specifications sections governing such roof, equipment, materials, or supplies.

ARTICLE 43 - CODES AND STANDARDS

Wherever reference is given to codes, standard specifications or other data published by regulating agencies including, but not limited to, national electrical codes, North Carolina state building codes, federal specifications, ASTM specifications, various institute specifications, etc., it shall be understood that such reference is to the latest edition including addenda published prior to the date of the contract documents.

ARTICLE 44 - INDEMNIFICATION

To the fullest extent permitted by law, the contractor shall indemnify and hold harmless the owner, the designer and the agents, consultants and employees of the owner and designer, from and against all claims, damages, losses and expenses, including, but not limited to, attorneys' fees, arising out of or resulting from the performance or failure of performance of the work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting there from, and (2) is caused in whole or in part by any negligent act or omission of the contractor, the contractor's subcontractor, or the agents of either the contractor or the contractor's subcontractor. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this article.

ARTICLE 45 - TAXES

- a. Federal excise taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3442(3)).
- b. Federal transportation taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3475(b) as amended).
- c. North Carolina sales tax and use tax, as required by law, do apply to materials entering into state work and such costs shall be included in the bid proposal and contract sum.
- d. Local option sales and use taxes, as required by law, do apply to materials entering into state work as applicable and such costs shall be included in the bid proposal and contract sum.
- e. **Accounting Procedures for Refund of County Sales & Use Tax**

Amount of county sales and use tax paid per contractor's statements:

Contractors performing contracts for state agencies shall give the state agency for whose project the property was purchased a signed statement containing the information listed in G.S. 105-164.14(e).

The Department of Revenue has agreed that in lieu of obtaining copies of sales receipts from contractors, an agency may obtain a certified statement as of April 1, 1991 from the contractor setting forth the date, the type of property and the cost of the property purchased from each vendor, the county in which the vendor made the sale and the amount of local sales and use taxes paid thereon. If the property was purchased out-of-state, the county in which the property was delivered should be listed. The contractor should also be notified that the certified statement may be subject to audit.

In the event the contractors make several purchases from the same vendor, such certified statement must indicate the invoice numbers, the inclusive dates of the invoices, the total amount of the invoices, the counties, and the county sales and use taxes paid thereon.

Name of taxing county: The position of a sale is the retailer's place of business located within a taxing county where the vendor becomes contractually obligated to make the sale. Therefore, it is important that the county tax be reported for the county of sale rather than the county of use.

When property is purchased from out-of-state vendors and the county tax is charged, the county should be identified where delivery is made when reporting the county tax.

Such statement must also include the cost of any tangible personal property withdrawn from the contractor's warehouse stock and the amount of county sales or use tax paid thereon by the contractor.

Similar certified statements by his subcontractors must be obtained by the general contractor and furnished to the claimant.

Contractors are not to include any tax paid on supplies, tools and equipment which they use to perform their contracts and should include only those building materials, supplies, fixtures and equipment which actually become a part of or annexed to the building or structure.

ARTICLE 46 - EQUAL OPPORTUNITY CLAUSE

The non-discrimination clause contained in Section 202 (Federal) Executive Order 11246, as amended by Executive Order 11375, relative to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin, and the implementing rules and regulations prescribed by the secretary of Labor, are incorporated herein.

ARTICLE 47 - EMPLOYMENT OF INDIVIDUALS WITH DISABILITIES

The contractor(s) agree not to discriminate against any employee or applicant for employment because of physical or mental disabilities in regard to any position for which the employee or applicant is qualified. The contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified individuals with such disabilities without discrimination based upon their physical or mental disability in all employment practices.

ARTICLE 48 - ASBESTOS-CONTAINING MATERIALS (ACM)

The State of North Carolina has attempted to address all asbestos-containing materials that are to be disturbed in the project. However, there may be other asbestos-containing materials in the work areas that are not to be disturbed and do not create an exposure hazard.

Contractors are reminded of the requirements of instructions under Instructions to Bidders and General Conditions of the Contract, titled Examination of Conditions. Statute 130A, Article 19, amended August 3, 1989, established the Asbestos Hazard Management Program that controls asbestos abatement in North Carolina. The latest edition of *Guideline Criteria for Asbestos Abatement* from the State Construction Office is to be incorporated in all asbestos abatement projects for the Capital Improvement Program.

ARTICLE 49 - MINORITY BUSINESS PARTICIPATION

GS 143-128.2 establishes a ten percent (10%) goal for participation by minority businesses in total value of work for each State building project. The document, *Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts* including Affidavits and Appendix E are hereby incorporated into and made a part of this contract.

ARTICLE 50 – CONTRACTOR EVALUATION

The contractor's overall work performance on the project shall be fairly evaluated in accordance with the State Building Commission policy and procedures, for determining qualifications to bid on future State capital improvement projects. In addition to final evaluation, interim evaluation may be prepared during the progress of project. The document, Contractor Evaluation Procedures, is hereby incorporated and made a part of this contract. The owner may request the contractor's comments to evaluate the designer.

ARTICLE 51 – GIFTS

Pursuant to N.C. Gen. Stat. § 133-32, it is unlawful for any vendor or contractor (i.e. architect, bidder, contractor, construction manager, design professional, engineer, subcontractor, supplier, vendor, etc.), to make gifts or to give favors to any State employee. This prohibition covers those vendors and contractors who: (1) have a contract with a governmental agency; or (2) have performed under such a contract within the past year; or (3) anticipate bidding on such a contract in the future. For additional information regarding the specific requirements and exemptions, vendors and contractors are encouraged to review G.S. Sec. 133-32.

During the construction of the Project, the Contractor is prohibited from making gifts to any of the Owner's employees, Owner's project representatives (architect, engineers, construction manager and their employees), employees of the State Construction Office and/or any other State employee that may have any involvement, influence, responsibilities, oversight, management and/or duties that pertain to and/or relate to the contract administration, financial administration and/or disposition of claims arising from and/or relating to the Contract and/or Project.

ARTICLE 52 – AUDITING-ACCESS TO PERSONS AND RECORDS

In accordance with N.C. General Statute 147-64.7, the State Auditor shall have access to Contractor's officers, employees, agents and/or other persons in control of and/or responsible for the Contractor's records that relate to this Contracts for purposes of conducting audits under the referenced statute. The Owner's internal auditors shall also have the right to access and copy the Contractor's records relating to the Contract and Project during the term of the Contract and within two years following the completion of the Project/close-out of the Contract to verify accounts, accuracy, information, calculations and/or data affecting and/or

relating to Contractor's requests for payment, requests for change orders, change orders, claims for extra work, requests for time extensions and related claims for delay/extended general conditions costs, claims for lost productivity, claims for loss efficiency, claims for idle equipment or labor, claims for price/cost escalation, pass-through claims of subcontractors and/or suppliers, and/or any other type of claim for payment or damages from Owner and/or its project representatives.

ARTICLE 53 – NORTH CAROLINA FALSE CLAIMS ACT

The North Carolina False Claims Act ("NCFCA"), N.C Gen. Stat. § 1-605 through 1-618, applies to this Contract. The Contractor should familiarize itself with the entire NCFCA and should seek the assistance of an attorney if it has any questions regarding the NCFCA and its applicability to any requests, demands and/or claims for payment its submits to the State through the contracting state agency, institution, university or community college.

The purpose of the NCFCA "is to deter persons from knowingly causing or assisting in causing the State to pay claims that are false or fraudulent and to provide remedies in the form of treble damages and civil penalties when money is obtained from the State by reason of a false or fraudulent claim." (Section 1-605(b).) A contractor's liability under the NCFCA may arise from, but is not limited to: requests for payment, invoices, billing, claims for extra work, requests for change orders, requests for time extensions, claims for delay damages/extended general conditions costs, claims for lost productivity, claims for loss efficiency, claims for idle equipment or labor, claims for price/cost escalation, pass-through claims of subcontractors and/or suppliers, documentation used to support any of the foregoing requests or claims, and/or any other request for payment from the State through the contracting state agency, institution, university or community college. The parts of the NCFCA that are most likely to be enforced with respect to this type of contract are as follows:

- A "claim" is "[a]ny request or demand, whether under a contract or otherwise, for money or property and whether or not the State has title to the money or property that (i) is presented to an officer, employee, or agent of the State or (ii) is made to a contractor ... if the money or property is to be spent or used on the State's behalf or to advance a State program or interest and if the State government: (a) provides or has provided any portion of the money or property that is requested or demanded; or (b) will reimburse such contractor ... for any portion of the money or property which is requested or demanded." (Section 1-606(2).)
- "Knowing" and "knowingly." – Whenever a person, with respect to information, does any of the following: (a) Has actual knowledge of the information; (b) Acts in deliberate ignorance of the truth or falsity of the information; and/or (c) Acts in reckless disregard of the truth or falsity of the information. (Section 1-606(4).) Proof of specific intent to defraud is not required. (Section 1-606(4).)
- "Material" means having a natural tendency to influence, or be capable of influencing, the payment or receipt of money or property. (Section 1-606(4).)
- Liability. – "Any person who commits any of the following acts shall be liable to the State for three times the amount of damages that the State sustains because of the act of that person[:] ... (1) Knowingly presents or causes to be presented a false or fraudulent claim for payment or approval. (2) Knowingly makes, uses, or causes to be made or used, a false record or statement material to a false or fraudulent claim. (3) Conspires to commit a violation of subdivision (1), (2) ..." (Section 1-607(a)(1), (2).)

- The NCFCA shall be interpreted and construed so as to be consistent with the federal False Claims Act, 31 U.S.C. § 3729, et seq., and any subsequent amendments to that act. (Section 1-616(c).)

Finally, the contracting state agency, institution, university or community college may refer any suspected violation of the NCFCA by the Contractor to the Attorney General's Office for investigation. Under Section 1-608(a), the Attorney General is responsible for investigating any violation of NCFCA, and may bring a civil action against the Contractor under the NCFCA. The Attorney General's investigation and any civil action relating thereto are independent and not subject to any dispute resolution provision set forth in this Contract. (See Section 1-608(a).)

ARTICLE 54 – TERMINATION FOR CONVENIENCE

Owner may at any time and for any reason terminate Contractor's services and work at Owner's convenience. Upon receipt of such notice, Contractor shall, unless the notice directs otherwise, immediately discontinue the work and placing of orders for materials, facilities and supplies in connection with the performance of this Agreement.

Upon such termination, Contractor shall be entitled to payment only as follows: (1) the actual cost of the work completed in conformity with this Agreement; plus, (2) such other costs actually incurred by Contractor as are permitted by the prime contract and approved by Owner; (3) plus ten percent (10%) of the cost of the work referred to in subparagraph (1) above for overhead and profit. There shall be deducted from such sums as provided in this subparagraph the amount of any payments made to Contractor prior to the date of the termination of this Agreement. Contractor shall not be entitled to any claim or claim of lien against Owner for any additional compensation or damages in the event of such termination and payment.

This Page Intentionally Blank

SECTION 0300

SUPPLEMENTARY GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the “General Conditions of the Contract, Standard Form For Construction Projects” prepared by the State Construction Office, North Carolina Department of Administration (Form OC-15, Twenty Fourth Edition, January 2013) and other provisions of the Contract Documents as indicated below. Any portions of the General Conditions of the Contract which are not so amended or supplemented remain in full force and effect. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

Article 1 – Definitions

As defined in Article 1 of the General Conditions, the Supplementary General Conditions as well as the WCU General Requirements are considered part of the contract documents.

The Owner is the State of North Carolina through Western Carolina University.

Provide shall mean purchase, deliver, install, new, clean, completely operational, fully tested and ready for use.

Article 4 – Copies of Drawings and Specifications

SC-4a through d: Delete Paragraphs a, b, c & d, in their entirety in Article 4 of the General Conditions and insert the following in its place:

- a. General contractor – One pdf copy of drawings and specifications plus up to three (3) sets of drawings and specifications, one copy of which the contractor shall maintain as a clean set of black line prints, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents as an as-built mark-up. The contractor shall turn over the as-built plans in a form acceptable to the designer prior to release of final payment to the contractor.
- b. Additional printed construction sets of drawings and specifications shall be furnished at a non-refundable cost of \$150.00, including mailing, to the contractor upon request by the contractor.

Article 5 – Shop Drawings, Submittals, Samples, Data

The submittal requirements are described in Article 5 of the General Conditions. Items for which submittals are required are listed below:

Pre-Submittals:

- The contractor shall provide the Owner a complete list of contact information for the Contractor, his key personnel, and all Subcontractors. This list shall be provided to the Owner prior to beginning the Work and shall be updated regularly with the updated provided to the Owner.
- All items referenced in Technical Specifications

Post-Submittals:

- All previously submitted documents revised to show as-built condition.
- O&M Manuals for any equipment requiring a submittal.

Data on the following items shall be sent to the Designer for review and approval. The submittal process is described in Article 5 of the General Terms and Conditions. Refer to "Technical Specifications" for required submittals. All Pre-Submittals shall be delivered to the Designer and Owner no later than the Preconstruction Meeting. All Post Submittals shall be delivered to the Designer and Owner within thirty (30) days of work completion. The final pay request shall be included with Post-Submittals.

The Contractor shall submit with initial approval of the design documents for compliance and accuracy, electronic copies in PDF format of all shop drawings and submittals. Physical samples shall be submitted for color and workmanship (mock-up) approval.

The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions or modifications including those requested by the Designer on previous submittals. In the absence of such written notice, the Designer's approval of a resubmission shall not apply to such revisions.

Article 6 – Working Drawings and Specifications at the Job Site

The Contractor shall maintain at the job site (job site office) a readable set of the complete set of working drawings and specifications for his work, including all shop drawings. The Contractor shall maintain at the job site an up-to-date, readable set of the As-Built drawings.

Article 8 – Materials, Equipment, Employees

Should an accident or disruption occur on the project work site, the Contractor shall notify the WCU Project Manager and WCU Safety and Risk Management Office as soon as possible and no less than 24 hours of occurrence.

The Contractor and Subcontractors shall be responsible for security to their equipment and the site-stored materials under their jurisdiction, whether paid for by the Owner or not, until acceptance of the project. The Contractor shall coordinate security requirements with the WCU Project Manager.

The Contractor shall maintain daily field reports by its field supervision listing, but not limited to, personnel onsite (including all subcontractors), weather conditions, major scopes of work under construction, material deliveries, safety incidents, progress photographs, and inspections. The Contractor shall submit a copy of the daily field reports to the Designer and Owner upon request and at project completion.

Article 10 – Permits, Inspections, Fees, Regulations

The Contractor shall request and obtain permission from the WCU Project Manager for an interruption of utility or services a minimum of seven (7) days in advance. Failure of the Contractor to obtain Owner permission shall not be grounds for an extension of time.

Prior to performing any "hot work" or any work above ceiling in existing buildings, the Contractor shall obtain a permit for such from the WCU Safety and Risk Management Office.

The Contractor shall comply with Owner's Interim Life Safety Plan requirements to maintain egress from all occupied buildings.

Article 14 – Construction Supervision and Schedule

The Contractor shall start work within two (2) weeks upon receipt of Notice to Proceed. The Contractor shall submit a project work schedule before beginning work. The starting date and work schedule shall be adhered to, and the work shall be performed during the Owner's normal working hours, 8:00 AM to 5:00 PM. Requests by the Contractor to work outside normal working hours shall be made a minimum of one (1) week in advance to the WCU Project Manager on site. The Contractor's bid shall include all costs associated with workers working outside of normal business hours and/or costs associated with workers working overtime as required to meet the specified project schedule. The Owner reserves the right to request work to be performed outside normal working hours and to limit Contractor activities when they conflict with Owner operations. Any increased costs due to Owner requirements for work outside normal hours not specified in the Contract Documents will be negotiated.

The Contractor shall maintain a daily field report including, but not limited to, listing of all personnel on site (including all Subcontractors), weather conditions, major scopes of work under construction, material deliveries, safety incidents, progress photographs, and inspections.

SC-14a: Add the following to Paragraph a. in Article 14 of the General Conditions:

a.The contractor's superintendent shall have a minimum of six years of experience in successfully supervising and completing a minimum of three projects of similar type, size and complexity. The contractor shall provide written verification of the superintendent's experience and a minimum of three favorable references if requested by the owner.

SC-14e: Delete Paragraph e. in Article 14 of the General Conditions in its entirety and insert the following in its place:

e. The contractor(s) shall employ a qualified North Carolina Professional Land Surveyor to establish additional permanent horizontal and vertical reference benchmarks in locations within line of sight of the project area and in locations where these will not be disturbed and to stake-out or lay out all work to be completed by the contractor. All reference benchmarks shall be based on the horizontal and vertical datums provided on the plans. Additional requirements of the contractor's surveyor are to be in accordance with the plans, the technical specifications and other portions of the contract documents.

SC-14f: Add the following to Paragraph f. in Article 14 of the General Conditions:

f.The project shall have a Project Expediter and the Project Expediter shall be the contractor.

Article 16 – Subcontracts and Subcontractors

All Subcontractors shall be identified in writing and approved by the Owner prior to the start of work

Article 19 – Change in the Work

Add the following to Paragraph k in Article 19 of the General Conditions:

k. All change order proposals submitted by the contractor to the designer for review, must include: the correct project title, the correct SCO project ID number, WCU project number, correct math,

complete backup information for all change order items with detailed cost breakdown including materials, labor, or unit cost, subcontractor and contractor overhead and profit. The change order cost will be rounded to the nearest whole dollar.

Article 23 – Time of Completion, Delays, Extension of Time

SC-23a: Add the following to Paragraph a. in Article 23 of the General Conditions:

a.The time of completion shall be **One Hundred and Fifty (150) consecutive calendar days** from the Notice to Proceed date to Final Completion.

SC-23b: Add the following to Paragraph b. in Article 23 of the General Conditions:

b.The amount of liquidated damages shall be **Five Hundred dollars (\$500.00) per day.**

SC-23d: Delete Paragraph d. in Article 23 of the General Conditions in its entirety and insert the following in its place:

d. If the contractor is delayed at any time in the progress of his work solely by any act or negligence of the owner, the designer, or by any employee of either; by any separate contractor employed by the owner; by changes ordered in the work; by labor disputes at the project site; by abnormal weather conditions not reasonably anticipated for the locality where the work is performed; by unavoidable casualties; by any causes beyond the contractor's control; or by any other causes which the designer and owner determine may justify the delay, then the contract time may be extended by change order only for the time which the designer and owner may determine is reasonable.

Time extensions will not be granted for rain, wind, snow or other natural phenomena of normal intensity for the locality where work is performed. For purpose of determining extent of delay attributable to unusual weather phenomena, a determination shall be made by comparing the weather for the contract period involved with the average of the preceding five (5) year climatic range during the same time interval based on the National Oceanic and Atmospheric Administration (NOAA) National Weather Service statistics **from the NOAA gauging station nearest to the project site** and on daily weather logs kept on the job site by the contractor reflecting the effect of the weather on progress of the work and initialed by the designer's representative. **Additional contract days will be granted to the Contractor on the basis of data from the nearest rain gauging station officially used by the National Oceanic and Atmospheric Administration (NOAA) for a minimum period of the past 5 years. When the number of rain days (0.1 inch rain event or greater) during the construction contract period, as measured at the job site, exceeds the most recently available 5 year average rain days (0.1 inch rain event or greater) for the same time period and season as determined by NOAA data, then the Contract Time will be extended by the number of calendar days that actual rain days exceeded the NOAA 5 year average number of rain days. No adjustment to contract price shall be made due to abnormal or severe weather conditions or delays resulting thereof.** No weather delays shall be considered after the building is dried in unless work claimed to be delayed is on the critical path of the baseline schedule or approved updated schedule. Time extensions for weather delays, acts of God, labor disputes, fire, delays in transportation, unavoidable casualties or other delays which are beyond the control of the Owner do

not entitle the Contractor to compensable damages for delays. Any contractor claim for compensable damages for delays is limited to delays caused solely by the owner or its agents. Contractor caused delays shall be accounted for before owner or designer caused delays in the case of concurrent delays.

Article 31 – Request for Payment

Modify Article 31 of the General Conditions by adding the following paragraph f:

f. The contractor shall submit Three (3) original signed copies of the pay applications with three (3) copies of all supporting documentation to the designer for review. If the pay application is acceptable to the designer, the designer will submit two (2) approved copies to the WCU Project Manager. Signed and certified sales tax forms and MBE/HUB forms and documentation must be submitted to the designer, by the contractor with each copy of the pay application. Sales tax forms and MBE/HUB forms must be submitted by the contractor with each pay application even if \$0 for the pay period.

Article 34 – Minimum Insurance Requirements

Modify the first paragraph of Article 34 of the General Conditions to read as follows:

The work under this contract shall not commence until the contractor has obtained all required insurance and verifying certificates of insurance have been approved in writing by the owner. These certificates shall contain a statement included in the block labeled “Description of Operation, Vehicles, Exclusions added by endorsements/Special Provisions” and reading as follows: **“Notwithstanding the preprinted cancellation provisions of this form, coverages afforded under the policies will not be cancelled, reduced in amount, nor will any coverages be eliminated until at least thirty (30) days notice, by certified mail, return receipt requested, to the insured and owner, of such alternation or cancellation.”**

Modify and revise the second sentence of paragraph c of Article 34 of the General Conditions to read as follows:

This insurance shall include the interests of the owner, the contractor, the subcontractors and subcontractors in the work and shall insure against risks of direct physical loss – (all perils).

Add the following to paragraph e of Article 34 of the General Conditions:

Automobile Liability insurance (the “Auto Insurance”) for claims and all perils for errors, omissions, and damages of any kind or character which may arise out of or result from Contractor's performance under this Agreement. The Auto Liability Insurance shall cover owned, hired, and non-owned commercial vehicles with policy limits of no less than \$150,000 bodily injury and property damage and \$150,000 uninsured/under insured motorist per occurrence.

Article 38 – Use of Premises

Work under this contract shall be performed in such a manner as to avoid interruption or interference with the operation of any existing activity on the premises or at the location of the work. The Owner may enforce extra restrictions during certain periods of the year. During examination periods, the Contactor shall restrict noise-making activities. If the project involves work in or near a building in which an exam is being conducted, the

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

Contractor shall be required to restrict operations which are disturbing to students during the hours of the exam(s). Work will not be permitted on Graduation Day, or the day preceding it.

While on campus, Contractor's and Sub-Contractor's personnel shall be identifiable at all times, for example, by wearing company names or logos on garments or hard hats.

Damage done to the University premises that are under the control of the Contractor, or damage caused by the contractor to premises used by the contractor, shall be corrected at the Contractor's expense.

The contractor shall schedule deliveries between 7:00 am and 4:00 pm. The contractor shall have adequate personnel and any necessary equipment onsite to receive deliveries. The contractor shall notify the WCU Project Manager of any deliveries of equipment, material or road work that will impede the flow of vehicular or pedestrian traffic. The contractor shall provide traffic control by certified traffic control personnel (vehicular and pedestrian) during these deliveries. Staging for multiple concrete / steel / other large material deliveries, crane and other large pieces of equipment must be coordinated with the WCU Project Manager. Walks, streets, and drives are most congested with pedestrians at the top of the hour, when making deliveries the carrier should be made aware of this and plan his deliveries accordingly.

A minimum five working days' notice must be given to the WCU Project Manager to block parking spaces, drives, roads, streets and pedestrian walks.

Roads, streets, drives, fire lanes must remain open at all times. Adequate clearance must be maintained for emergency vehicles to negotiate the drive. Maintain a minimum of 20 feet for fire lanes. Construction vehicles are not allowed to block, park, or stage in a fire lanes. Vehicles blocking fire lanes will be ticketed and towed at the Contractor's expense.

Construction fences should be covered with fabric screening unless it blocks the view of oncoming traffic. Construction gates will swing into the construction area. The construction fences shall not obstruct pedestrian or vehicle traffic unless alternate ways were designed in the site drawings and approved by the WCU Project Manager.

The Contractor will provide additional cleanup, warning signs, and barricades if deemed necessary by the Owner.

The Contractor's scheduling and staging requirements must be coordinated with, and approved by, the WCU Project Manager.

Contractors working for the University are required to comply with Western Carolina University's policies, which are provided herein and hereby incorporated and made a part of this contract.

- Smoking and Vaping Policies
<https://www.wcu.edu/discover/leadership/office-of-the-chancellor/legal-counsel-office/university-policies/numerical-index/university-policy-45.aspx>
- Alcoholic Beverages
<https://www.wcu.edu/discover/leadership/office-of-the-chancellor/legal-counsel-office/university-policies/numerical-index/university-policy-81.aspx>
- Weapons on Campus
<https://www.wcu.edu/discover/leadership/office-of-the-chancellor/legal-counsel-office/university-policies/numerical-index/university-policy-91.aspx>
- Campus/Workplace Violence Prevention and Management
<https://www.wcu.edu/discover/leadership/office-of-the-chancellor/legal-counsel-office/university-policies/numerical-index/university-policy-109.aspx>

- Title IX Sexual Harassment Policy
<https://www.wcu.edu/discover/leadership/office-of-the-chancellor/legal-counsel-office/university-policies/numerical-index/university-policy-129.aspx>

Article 40 - Utilities, Structures, Signs

The Owner will provide water and electricity to the extent they are available at the project site. The Contractor shall be responsible for making connections to provided utilities.

The Contractor shall provide restroom facilities. The Contractor's personnel shall not use toilet or washroom facilities in the existing building.

The Contractor shall be responsible for procedures to make temporary disruptions to existing utilities serving the building(s) as well as disruptions to roads and pedestrian walks and any disruptions shall be planned well in advance of the work. The work shall be executed in a manner to provide reasonably continuous service throughout the construction period. Any and all disruptions and interruptions of service shall be coordinated with the WCU Project Manager a minimum of seven (7) days in advance. Failure of the Contractor to obtain Owner permission shall not be grounds for an extension of time.

End of Section

This Page Intentionally Blank

GUIDELINES FOR RECRUITMENT AND SELECTION OF MINORITY BUSINESSES FOR PARTICIPATION IN STATE CONSTRUCTION CONTRACTS

In accordance with G.S. 143-128.2 (effective January 1, 2002) these guidelines establish goals for minority participation in single-prime bidding, separate-prime bidding, construction manager at risk, and alternative contracting methods, on State construction projects in the amount of \$300,000 or more. The legislation provides that the State shall have a verifiable ten percent (10%) goal for participation by minority businesses in the total value of work for each project for which a contract or contracts are awarded. These requirements are published to accomplish that end.

SECTION A: INTENT

It is the intent of these guidelines that the State of North Carolina, as awarding authority for construction projects, and the contractors and subcontractors performing the construction contracts awarded shall cooperate and in good faith do all things legal, proper and reasonable to achieve the statutory goal of ten percent (10%) for participation by minority businesses in each construction project as mandated by GS 143-128.2. Nothing in these guidelines shall be construed to require contractors or awarding authorities to award contracts or subcontracts to or to make purchases of materials or equipment from minority-business contractors or minority-business subcontractors who do not submit the lowest responsible, responsive bid or bids.

SECTION B: DEFINITIONS

1. Minority - a person who is a citizen or lawful permanent resident of the United States and who is:
 - a. Black, that is, a person having origins in any of the black racial groups in Africa;
 - b. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
 - c. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, the Pacific Islands;
 - d. American Indian, that is, a person having origins in any of the original peoples of North America; or
 - e. Female
2. Minority Business - means a business:
 - a. In which at least fifty-one percent (51%) is owned by one or more minority persons, or in the case of a corporation, in which at least fifty-one percent (51%) of the stock is owned by one or more minority persons or socially and economically disadvantaged individuals; and
 - b. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.
3. Socially and economically disadvantaged individual - means the same as defined in 15 U.S.C. 637. "Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as a member of a group without regard to their individual qualities". "Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged".
4. Public Entity - means State and all public subdivisions and local governmental units.
5. Owner - The State of North Carolina, through the Agency/Institution named in the contract.
6. Designer - Any person, firm, partnership, or corporation, which has contracted with the State of North Carolina to perform architectural or engineering, work.
7. Bidder - Any person, firm, partnership, corporation, association, or joint venture seeking to be awarded a public contract or subcontract.

8. Contract - A mutually binding legal relationship or any modification thereof obligating the seller to furnish equipment, materials or services, including construction, and obligating the buyer to pay for them.
9. Contractor - Any person, firm, partnership, corporation, association, or joint venture which has contracted with the State of North Carolina to perform construction work or repair.
10. Subcontractor - A firm under contract with the prime contractor or construction manager at risk for supplying materials or labor and materials and/or installation. The subcontractor may or may not provide materials in his subcontract.

SECTION C: RESPONSIBILITIES

1. Office for Historically Underutilized Businesses, Department of Administration (hereinafter referred to as HUB Office).

The HUB Office has established a program, which allows interested persons or businesses qualifying as a minority business under G.S. 143-128.2, to obtain certification in the State of North Carolina procurement system. The information provided by the minority businesses will be used by the HUB Office to:

- a. Identify those areas of work for which there are minority businesses, as requested.
- b. Make available to interested parties a list of prospective minority business contractors and subcontractors.
- c. Assist in the determination of technical assistance needed by minority business contractors.

In addition to being responsible for the certification/verification of minority businesses that want to participate in the State construction program, the HUB Office will:

- (1) Maintain a current list of minority businesses. The list shall include the areas of work in which each minority business is interested.
- (2) Inform minority businesses on how to identify and obtain contracting and subcontracting opportunities through the State Construction Office and other public entities.
- (3) Inform minority businesses of the contracting and subcontracting process for public construction building projects.
- (4) Work with the North Carolina trade and professional organizations to improve the ability of minority businesses to compete in the State construction projects.
- (5) The HUB Office also oversees the minority business program by:
 - a. Monitoring compliance with the program requirements.
 - b. Assisting in the implementation of training and technical assistance programs.
 - c. Identifying and implementing outreach efforts to increase the utilization of minority businesses.
 - d. Reporting the results of minority business utilization to the Secretary of the Department of Administration, the Governor, and the General Assembly.

2. State Construction Office

The State Construction Office will be responsible for the following:

- a. Furnish to the HUB Office a minimum of twenty-one days prior to the bid opening the following:
 - (1) Project description and location;
 - (2) Locations where bidding documents may be reviewed;
 - (3) Name of a representative of the owner who can be contacted during the advertising period to advise who the prospective bidders are;
 - (4) Date, time and location of the bid opening.
 - (5) Date, time and location of prebid conference, if scheduled.
- b. Attending scheduled prebid conference, if necessary, to clarify requirements of the general statutes regarding minority-business participation, including the bidders' responsibilities.

- c. Reviewing the apparent low bidders' statutory compliance with the requirements listed in the proposal, that must be complied with, if the bid is to be considered as responsive, prior to award of contracts. The State reserves the right to reject any or all bids and to waive informalities.
- d. Reviewing of minority business requirements at Preconstruction conference.
- e. Monitoring of contractors' compliance with minority business requirements in the contract documents during construction.
- f. Provide statistical data and required reports to the HUB Office.
- g. Resolve any protest and disputes arising after implementation of the plan, in conjunction with the HUB Office.

3. Owner

Before awarding a contract, owner shall do the following:

- a. Develop and implement a minority business participation outreach plan to identify minority businesses that can perform public building projects and to implement outreach efforts to encourage minority business participation in these projects to include education, recruitment, and interaction between minority businesses and non-minority businesses.
- b. Attend the scheduled prebid conference.
- c. At least 10 days prior to the scheduled day of bid opening, notify minority businesses that have requested notices from the public entity for public construction or repair work and minority businesses that otherwise indicated to the Office for Historically Underutilized Businesses an interest in the type of work being bid or the potential contracting opportunities listed in the proposal. The notification shall include the following:
 - 1. A description of the work for which the bid is being solicited.
 - 2. The date, time, and location where bids are to be submitted.
 - 3. The name of the individual within the owner's organization who will be available to answer questions about the project.
 - 4. Where bid documents may be reviewed.
 - 5. Any special requirements that may exist.
- d. Utilize other media, as appropriate, likely to inform potential minority businesses of the bid being sought.
- e. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
- f. Review, jointly with the designer, all requirements of G.S. 143-128.2(c) and G.S. 143-128.2(f) – (i.e. bidders' proposals for identification of the minority businesses that will be utilized with corresponding total dollar value of the bid and affidavit listing good faith efforts, or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of award to the State Construction Office.
- g. Evaluate documentation to determine good faith effort has been achieved for minority business utilization prior to recommendation of award to State Construction Office.
- h. Review prime contractors' pay applications for compliance with minority business utilization commitments prior to payment.
- i. Make documentation showing evidence of implementation of Owner's responsibilities available for review by State Construction Office and HUB Office, upon request

4. Designer

Under the single-prime bidding, separate prime bidding, construction manager at risk, or alternative contracting method, the designer will:

- a. Attend the scheduled prebid conference to explain minority business requirements to the prospective bidders.
- b. Assist the owner to identify and notify prospective minority business prime and subcontractors of potential contracting opportunities.
- c. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
- d. Review jointly with the owner, all requirements of G.S. 143-128.2(c) and G.S.143-128.2(f) – (i.e. bidders' proposals for identification of the minority businesses that will be utilized with

corresponding total dollar value of the bid and affidavit listing Good Faith Efforts, or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of award.

- e. During construction phase of the project, review “MBE Documentation for Contract Payment” – (Appendix E) for compliance with minority business utilization commitments. Submit Appendix E form with monthly pay applications to the owner and forward copies to the State Construction Office.
- f. Make documentation showing evidence of implementation of Designer’s responsibilities available for review by State Construction Office and HUB Office, upon request.

5. Prime Contractor(s), CM at Risk, and Its First-Tier Subcontractors

Under the single-prime bidding, the separate-prime bidding, construction manager at risk and alternative contracting methods, contractor(s) will:

- a. Attend the scheduled prebid conference.
- b. Identify or determine those work areas of a subcontract where minority businesses may have an interest in performing subcontract work.
- c. At least ten (10) days prior to the scheduled day of bid opening, notify minority businesses of potential subcontracting opportunities listed in the proposal. The notification will include the following:
 - (1) A description of the work for which the subbid is being solicited.
 - (2) The date, time and location where subbids are to be submitted.
 - (3) The name of the individual within the company who will be available to answer questions about the project.
 - (4) Where bid documents may be reviewed.
 - (5) Any special requirements that may exist, such as insurance, licenses, bonds and financial arrangements.

If there are more than three (3) minority businesses in the general locality of the project who offer similar contracting or subcontracting services in the specific trade, the contractor(s) shall notify three (3), but may contact more, if the contractor(s) so desires.

- d. During the bidding process, comply with the contractor(s) requirements listed in the proposal for minority participation.
- e. Identify on the bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).
- f. Make documentation showing evidence of implementation of PM, CM-at-Risk and First-Tier Subcontractor responsibilities available for review by State Construction Office and HUB Office, upon request.
- g. Upon being named the apparent low bidder, the Bidder shall provide one of the following: (1) an affidavit (Affidavit C) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal; (2) if the percentage is not equal to the applicable goal, then documentation of all good faith efforts taken to meet the goal. Failure to comply with these requirements is grounds for rejection of the bid and award to the next lowest responsible and responsive bidder.
- h. The contractor(s) shall identify the name(s) of minority business subcontractor(s) and corresponding dollar amount of work on the schedule of values. The schedule of values shall be provided as required in Article 31 of the General Conditions of the Contract to facilitate payments to the subcontractors.
- i. The contractor(s) shall submit with each monthly pay request(s) and final payment(s), “MBE Documentation for Contract Payment” – (Appendix E), for designer’s review.
- j. During the construction of a project, at any time, if it becomes necessary to replace a minority business subcontractor, immediately advise the owner, State Construction Office, and the Director of the HUB Office in writing, of the circumstances involved. The prime contractor shall make a good faith effort to replace a minority business subcontractor with another minority business subcontractor.

- k. If during the construction of a project additional subcontracting opportunities become available, make a good faith effort to solicit subbids from minority businesses.
- l. It is the intent of these requirements apply to all contractors performing as prime contractor and first tier subcontractor under construction manager at risk on state projects.

6. **Minority Business Responsibilities**

While minority businesses are not required to become certified in order to participate in the State construction projects, it is recommended that they become certified and should take advantage of the appropriate technical assistance that is made available. In addition, minority businesses who are contacted by owners or bidders must respond promptly whether or not they wish to submit a bid.

SECTION 4: DISPUTE PROCEDURES

It is the policy of this state that disputes that involves a person's rights, duties or privileges, should be settled through informal procedures. To that end, minority business disputes arising under these guidelines should be resolved as governed under G.S. 143-128(g).

SECTION 5: These guidelines shall apply upon promulgation on state construction projects. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: www.nc-sco.com

SECTION 6: In addition to these guidelines, there will be issued with each construction bid package provisions for contractual compliance providing minority business participation in the state construction program.

MINORITY BUSINESS CONTRACT PROVISIONS (CONSTRUCTION)

APPLICATION:

The **Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts** are hereby made a part of these contract documents. These guidelines shall apply to all contractors regardless of ownership. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: <http://www.nc-sco.com>

MINORITY BUSINESS SUBCONTRACT GOALS:

The goals for participation by minority firms as subcontractors on this project have been set at 10%.

The bidder must identify on its bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit (Affidavit A) listing good faith efforts or affidavit (Affidavit B) of self-performance of work, if the bidder will perform work under contract by its own workforce, as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).

The lowest responsible, responsive bidder must provide Affidavit C, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal.

OR

Provide Affidavit D, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, **with documentation of Good Faith Effort, if the percentage is not equal to the applicable goal.**

OR

Provide Affidavit B, which includes sufficient information for the State to determine that the bidder does not customarily subcontract work on this type project.

The above information must be provided as required. Failure to submit these documents is grounds for rejection of the bid.

MINIMUM COMPLIANCE REQUIREMENTS:

All written statements, affidavits or intentions made by the Bidder shall become a part of the agreement between the Contractor and the State for performance of this contract. Failure to comply with any of these statements, affidavits or intentions, or with the minority business Guidelines shall constitute a breach of the contract. A finding by the State that any information submitted either prior to award of the contract or during the performance of the contract is inaccurate, false or incomplete, shall also constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the State whether to terminate the contract for breach.

In determining whether a contractor has made Good Faith Efforts, the State will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts. Good Faith Efforts include:

- (1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed.
- (2) Making the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due.
- (3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation.
- (4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- (5) Attending any prebid meetings scheduled by the public owner.
- (6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.
- (7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- (8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- (9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- (10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

APPENDIX E

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments made to Minority Business Enterprises on this project for the above-mentioned period.

MBE FIRM NAME	* INDICATE TYPE OF MBE	AMOUNT PAID THIS MONTH	TOTAL PAYMENTS TO DATE	TOTAL AMOUNT COMMITTED

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Social and Economically Disadvantage (D)

Date: _____ Approved/Certified By: _____

Name

Title

Signature

SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT

SECTION 0500 SPECIAL CONDITIONS

The following selected special conditions apply to this project.

1.0 Project Identification: All correspondence, reports, schedules, applications of payment, documents, etc., must contain proper name of project, code and item number, and the SCO ID number, which is 22-24778-01..

2.0 Contractor Coordination, University Restrictions, Work Conflicts, Delay Allowances & Stop Orders: Throughout construction, the Contractor shall be responsible for coordinating all stages and aspects of the work with all others using or working within or in the vicinity of the project area, including but not limited to: Western Carolina University Facilities Management, university staff, university administration, university grounds crew, the sewer system operators, the NC Department of Transportation (NCDOT), other contractors working in or adjacent to the project area, service companies and all utility owners. Existing utilities within the project area may be in conflict with portions of the work and will require modifications and/or relocations. Any costs associated with relocating utilities and assessed by the utility company as relocation costs will be paid for by the owner, directly to the utility owner. When delays are caused by parties other than the contractor and prevent the contractor from continuing with any portion of the work, the contractor may request additional time equal to the actual time of the delay. The contractor's request for additional time must be made in writing to the engineer within 10 days after occurrence of the delay event. If, in the opinion of the engineer, the time extension is justified, the contract time will be extended for a time equal to the actual time of the delay. No additional monetary compensation or any other form of compensation will be paid to the contractor for delays related to other contractors, utilities or school operations. The contractor is responsible for including in their bid, any and all other allowances necessary for delays due to school operations, delays due to the work of other contractors and delays due to utility relocations/modifications whether direct or incidental.

3.0 Contractor Use of Premises: During construction, the contractor shall have use of the premises to the extent required for construction operations. However, the contractor's use of the premises and construction operations is limited by the Owner's ability to provide uninterrupted operation of the university and any ongoing work being performed by other contractors working in and adjacent to the project area. The contractor shall confine operations to the immediate areas of construction. Portions of the site beyond the area of proposed construction work are not to be used for construction traffic and shall not be disturbed. Under no circumstances will the contractor be allowed to enter university buildings or use university restroom or sanitary facilities. The contractor is responsible for providing approved, portable sanitary facilities and office space as required by regulation and as necessary to complete their work.

4.0 Erosion Control & Stormwater: Protection of adjacent properties and surface waters should be emphasized and given careful consideration by the contractor in planning all construction sequencing, scheduling and construction practices. The contractor shall perform all work in a manner which provides maximum protection of surface waters and adjacent properties. The contractor is responsible for complying with all erosion control and stormwater regulations (including all self monitoring and record keeping) specific to the project site.

5.0 Payment for Erosion Control: There shall be no specific pay items for erosion control. Erosion control shall be treated as incidental work. For the purposes of the Owner making payments to the Contractor, **erosion control shall be treated as 5% of all unit pay items.** See Section 02370, Erosion Control for additional information.

6.0 Existing Buried Utilities: There are existing buried utilities within the project area which are not shown on the plans and existing utilities shown on the plans that may not be shown correctly on the plans. The contractor should contact NC One Call and all non-member utilities and make the necessary additional investigations and implement the necessary measures, at the contractor's expense, to successfully complete the project.

7.0 Unit Prices: Bidders should take note that unit price bid amounts for all Work includes bid quantity allowances listed in the bid form. These bid quantities will be adjusted to the actual quantities of work performed prior to final payment and therefore may result in an increase or decrease in the total payment for all Work depending upon the actual final quantities for allowance items. The engineer will review and will be responsible for determining all final pay quantities and will be the final judge of all pay quantities.

8.0 Protection of Existing Facilities: Contractor is responsible for preventing any damage to existing structures, utilities, landscaping, plantings, lighting and other existing site improvements, whether shown on the plans, not shown on the plans or incorrectly shown on the plans. Additionally, the contractor shall pay particular attention and take extra precautions to prevent damage (ie: breakage, settling, scuffing, etc.) to existing brick pavers and landscaping in all locations. The contractor will be responsible for repairing any damage related to construction activity, to preconstruction condition or better and to the satisfaction of the owner. Pavers to be removed and re-used shall be removed without damage by the contractor, cleaned and stored in a secure location to prevent damage, degradation or loss. Any damaged or lost pavers will be replaced with matching pavers by the contractor, at the contractor's expense.

9.0 Unclassified Excavation: All excavation for this project will be "unclassified" with the exception of any "rock excavation" and "undercut" as defined by the Contract Documents.

10.0 Engineer's Site Visits: The Contractor agrees to closely coordinate with the Engineer and allow time for the Engineer to observe underground installations, particularly storm drainage, base materials and other excavated areas, prior to backfilling operations. The Contractor will be responsible for coordinating all site visits by the Engineer and providing the Engineer a minimum of 48 hours notice prior to the need for a site visit.

11.0 Tie ins: The Contractor shall be the party responsible for making proper tie ins of all storm drains and other utilities, as applicable and as necessary to make all work function as intended.

12.0 Project Meetings: The Contractor and all subcontractors shall be required to have authorized and qualified supervisory level representatives, who are well familiar with the project progress and project

activities, attend all project meetings, preconstruction conferences, progress meetings and any other meetings scheduled by the owner or designer. The contractor will be responsible for taking detailed notes during the meeting and developing written minutes for the meeting, in chronological order, accurately detailing the meeting date, time, and place, the attendees and their contact information, project schedule status, topics discussed and how they were initiated, action items and the person(s) responsible for taking action, key events, descriptions of decisions made and party responsible for each decision and any other pertinent issues, discussions or course of action.

13.0 Disturbance of Pavements: The Contractor shall make provisions when removing pavers, cutting existing pavements, including sidewalks, to maintain vehicle and pedestrian routes in a usable condition at all times as required to maintain accessibility for all students and emergency vehicles and in a condition acceptable to the owner and other authorities having jurisdiction. All pavements, including those used for vehicle and pedestrian traffic, shall, at a minimum, have a firm, stable temporary gravel surface, suitable for use by traffic. Additional provisions shall be made by the contractor to maintain all existing ADA accessible routes and facilities in a condition acceptable to the owner. All asphalt and concrete pavements, curb and gutter and other pavement surfaces shall be repaired within 10 calendar days of when pavement was disturbed.

14.0 Asphalt Price Adjustments & Asphalt Availability: No adjustments to contract prices will be made for fluctuations in asphalt prices.

15.0 Project Coordination with Owner: During construction, date specific coordination by the contractor will be required with WCU University Police, Computer Services [T Services], and WCU phone system coordination with Verizon, Facilities Management [FM] for steamline work, sewer, domestic water, stormwater and electrical service. All of this coordination will be through the WCU Facilities Management Project Manager.

16.0 Work or Equipment by Owner: There is no work by Owner in this project.

17.0 Campus Environment:

- A. Student, Faculty and Staff Contacts: Contractors and contractor's personnel, Subcontractors and Subcontractor's personnel, material delivery personnel are on campus to perform contract work. Contact with students, faculty, staff or University visitors is not permitted. In these litigious times, contact: is defined as verbal, offensive gestures, discriminatory signs or clothes. Project personnel are expected to behave properly on campus. Indecent behavior, language or non-verbal communication will not be tolerated.

Refer to University Policies issued by the Chancellor's office:

For the purposes of Policy #53, Contractor's, Subcontractor's and material delivery personnel are considered to be "employees" during their time on campus performing construction related activities. Contractors, Subcontractors and material supply companies must agree to remove

personnel or groups who violate this Policy.

B. Radios, personal electronic music devices: For Safety purposes, portable or vehicular radios and electronic music devices are not permitted to be played while on campus.

C. University Facilities: University Food Service facilities exist for the use of WCU students, faculty and staff. Contractors must either bring their own food to jobsite or use community food service establishments.

D. WCU buildings are tobacco free. This includes smoke or chew tobacco forms. No smoking within 50 feet of building perimeter.

E. It is illegal for any person to bring firearms, any type of alcoholic beverage, or drugs other than prescription pharmaceuticals onto campus property.

F. Working Hours: Emergency repair work can be performed at any hour, in any location. Coordinate with WCU Project Manager.

18.0 Protection of existing materials: All existing materials to remain must be adequately protected throughout construction period. If damage occurs, the Contractor shall repair damage to original condition to the Owner's satisfaction or replace damaged materials.

19.0 Transportation:

A. Parking:

i. Contractor may park limited number of vehicles within construction fence / staging area when the construction site will accommodate. This is typically limited to one (1) lightweight truck per Subcontractor.

ii. Parking for additional personnel is to be coordinated with WCU Project Manager. Contractor's personnel who park outside construction fence in student, faculty or staff parking areas will be subject to fines and or towing.

B. Deliveries: Contractors are responsible for insuring that material deliveries arrive safely at jobsite. At a minimum Supplier transportation drivers should know the name of Contractor, name of Project and driving directions. Contractor representatives are to be available to receive deliveries. The owner will not receive deliveries on behalf of the contractor.

C. Speed Limit: Note that campus wide speed limit is 20 miles per hour or per displayed speed limit. Construction personnel must obey speed limit. Crosswalks throughout campus establish areas where pedestrians have right-of-way. Vehicular traffic must yield at cross-walks. This includes students, faculty and staff when contractor's personnel are using cross-walks. Keep in mind that pedestrians

occasionally are distracted and may not be attentive to task at hand, i.e. driving. Exercise caution.

D. Parking Permits: Contractor to comply with the owner's current Visitor Parking Permit policy and pay for any parking permits, if required.

20.0 Material Storage:

A. The contractor is required to install suitable construction fencing, barricades and other safety measures as required to protect WCU students, faculty, staff and all other persons from injury and personal property from damage. At a minimum, individual work areas shall be secured by completely encompassing with 6' high, self supporting chain link fencing that can be securely locked after work hours. Comply with all OSHA rules and regulations. When work is complete, fencing must be removed and ground contours restored to original condition or adjusted to coordinate with new construction in accordance with the plans. No signage is permitted on fence unless approved by WCU.

B. Jobsite storage within project Construction Fence: Contractor shall coordinate "lay down" material storage area required within construction fence with the designer and the WCU Project Manager. When project is complete and materials removed, repair any damage to pavements, grassing, landscaping and any other preconstruction conditions to the satisfaction of the design & owner.

C. Remote Storage Trailer Storage: Containerized or enclosed trailer storage that exceeds project fence area must be located at area(s) designated by the WCU Project Manager if these areas are made available by the owner. Trailers must be coordinated with other project trailers and location approved by the WCU Facilities Management Director of Design and Construction. If miss-located, trailer[s] will be relocated to approved location at the contractor's expense. No open trailers or flatbed trailers are permitted, unless otherwise authorized. Each trailer must be identified with two 8" x 8" wood or metal signs painted yellow, 1 mounted on rear door and 1 mounted on side of trailer. Signage lettering must be contrasting color and minimum 1" high. Signage must identify Contractor or Subcontractor, with phone number and Project title. If more than 1 trailer is used, trailers must be numbered on sign. Company logos may be used, but lettering height should not be reduced for larger logo.

D. Remote Palletized Storage: Note that this staging area is not the equivalent of a "bonded warehouse". Loose stored materials are still the property and responsibility of the Contractor or Subcontractor. Layout of palletized storage area must be approved by the WCU Facilities Management Director of Design and Construction. Coordinate storage for this project with other WCU projects storage.

21.0 Utilities:

A. All interruption of campus services for work will be coordinated through the WCU Project

Manager. Contractor will not interrupt existing services without prior approval from Owner. The Contractor, under the supervision of the Owner, will throw switches, turn valves, etc. WCU requires seven (7) days notice minimum for major utility outages. WCU requires a forty-eight (48) hour notice minimum in minor outages such as sprinkler, fire alarm, water, etc.

B. Electric power for construction use shall be the contractor's responsibility to provide at the contractor's expense.

C. Sanitary facilities: Contractor must provide and maintain Port-A-John type units.

22.0 Re-establishment of existing conditions: To avoid typical disagreements at the conclusion of a project, Contractor and WCU Project Manager should review project existing conditions before installation of project fencing, demolition or earth moving activities begin. The contractor is encouraged to take pre-construction photographs prior to commencing any construction activities with copies provided to the owner, designer, and contractor.

23.0 Site Management:

A. Contractor is responsible for maintaining a safe site. Well organized sites are usually safer sites. Grass must be mowed or trimmed to keep height below 6" maximum length for entire project period. Cutting is Contractor's responsibility within construction fence and 24" outside construction limits. When project is completed and project fence is removed, cut grass height to match adjacent grass height.

B. Storm water runoff cannot adversely affect adjacent areas throughout length of project. Install NCDENR required erosion protection measures before beginning earth moving or trenching operations. NCDENR requirements must be following by the contractor throughout construction. Erosion control measures must be maintained throughout duration of project until final ground cover is established. If silt fence or other erosion control measures have retained silt materials as a resulting from rainstorm, contractor must clean out and properly dispose of all accumulated silt after each rain event to insure that erosion control measures have adequate capacity for next rainstorm.

C. No construction or directional signage is allowed on campus. No project signs are required. Jobsite trailer may display Contractor's logo sign 4' x 6' maximum size.

24.0 Construction Debris:

A. Debris must be removed from campus. All debris must be transported off campus to regulated landfill or recycling center. Secure debris in trucks so that material cannot fall or be blown from trucks during transportation through campus.

B. Demolition debris is not to remain on project site. The contractor must provide their own dumpsters and properly empty periodically. WCU dumpsters shall not be used for any construction debris or construction related wastes.

C. Stockpiling of excess material is not permitted. Materials such as topsoil may be stockpiled in an organized manner for later use. If material will not be reused in finished work, it is expected to be removed from the site.

D. Adjacent roadways must be cleaned daily as required to prevent mud or dust from coating existing roadway.

25.0 Earthwork:

A. Control any air pollution caused by dust and dirt. Comply with governing regulations.

B. Any fill materials shall be free of organic material.

C. Protect existing trees and vegetation to remain against unnecessary cutting, breaking, skinning of roots or bark, smothering trees by stockpiling building materials or soil materials within drip line.

D. Utility Lines:

i. Trenching or any fill materials under utility lines are frequently subjected to subsidence from inadequate compaction. Fully compact any subgrade materials to provide adequate utility line bearing.

ii. Fill lifts depth: 6" maximum depth for fill lifts performed by heavy equipment. 4" maximum depth for hand operated tamper compaction.

iii. Refer to specification sections for specific compaction requirements.

iv. No frozen material or frozen subgrade may be used under utility lines.

26.0 Grass Bed Preparation: Planting Bed depth of 3" required. Organic topsoil, free of roots, stones larger than 1/2", debris and weeds.

27.0 Demolition:

A. Structure: No demolition or excavation is to be performed until Contractor has a perfect understanding of existing structural systems. Install any temporary bracing required to prevent movement of existing structural elements scheduled to remain.

B. Protection of materials or finishes to remain: Contractor is responsible to provide adequate protection for any materials to remain.

C. Dust Protection: Contractor must erect Dust Curtains before beginning demolition work at areas where dust will enter existing spaces or buildings. Curtains must prevent dust from billowing into adjacent spaces. Seal curtains against existing finishes. Curtains shall be minimum 0.004" [4 mils.] thick polyethylene sheets. Maintain throughout demolition work. Construction personnel shall not track dust or dirt into any occupied portions of walkways, sidewalks or buildings.

D. Salvage Materials: Contractors must coordinate salvage schedule in advance with WCU Project Manager.

END OF SECTION

This Page Intentionally Blank

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

SECTION 0600

Report of Geotechnical Exploration

The following geotechnical report by Kessel Engineering Group is intended only for general reference and is not a part of the Contract Documents and recommendations in this report do not illustrate construction details. See other sections of the Project Manual and the drawings for construction requirements. Bidders are responsible for making their own interpretations of data, conducting their own investigations, verifications and reaching their own conclusions regarding physical conditions prior to submitting a bid. The bidder shall obtain the approval of the owner prior to conducting on site investigations.



August 29, 2022

Mr. Daniel Fiskeaux
Project Manager
Facilities Management
Western Carolina University
3476 Old Cullowhee Road
Cullowhee, North Carolina 28723

Subject: **Report of Limited Hand Auger Boring Exploration**
Central Plaza Drainage and Landscape Improvements / Phase 1
Western Carolina University
Cullowhee, North Carolina
BLE Project No. J22-18248-01

Dear Mr. Fiskeaux:

Bunnell-Lammons Engineering, Inc. (BLE) is pleased to present this report of limited hand auger boring exploration for the subject project. Our services were provided in accordance with Bunnell-Lammons Engineering (BLE) Work Authorization Sheet P22-1143 dated June 17, 2022 and your purchase order PO165610 dated June 24, 2024. Project information was obtained from correspondence with you and Mr. Victor Lofquist, P.E. with Lofquist & Associates, Inc. along with a drawing SD1 illustrating the subject paver and landscaping areas in the QUAD where deficiency have been noted. This report presents a description of our field observations and limited subsurface exploration and provides our conclusions and recommendations relative to the existing subgrade condition.

Project Information/Observations

Western Carolina University is currently planning for the design and repair of the paving and landscaped areas in the QUAD section of the campus, which typically includes the areas around the Courtyard Dining Hall, Central Plaza/Fountain, the Balsam Residence Hall and the Blue Ridge Residence Hall. The paved areas consist of mainly of concrete pavers along with isolated areas of concrete sidewalks surrounded by landscaped areas and structures. Based on our review of the provided drawing and our site observations, sections of the pavers have settled and/or had separated joints along with areas of missing pavers, various areas were also noted to have missing or broken edge support. The areas that had settled were noted to have had ponded water based on the staining on the pavers and the apparent depression. There were also several areas where the existing concrete sidewalks have been cracked, particularly at the transition to the concrete pavers. There was numerous landscaped area (i.e., maintained grass and mulch planting areas) along the edges of the paving that were noted to pond water and/or have poor drainage features.

We understand the pavers and sidewalks in the subject area are mainly traversed by the students and faculty, but are also traversed by occasional WCU maintenance vehicles (i.e., pickup trucks). However, we also understand that there is also the possibility of emergency vehicles and fire trucks traversing these paved areas. The frequency of the vehicles was not provided at the time this report was prepared.



We have not been informed of any significant grade modification at the time this report was prepared, as such, we have assumed that the proposed elevation of the proposed remediated paver areas would remain at the current elevations or will be close (+/- 6 inches) to the existing elevations. As such, it was requested that BLE observe, sample and evaluate the soil conditions in the subject area to determine the existing base and subgrade conditions and provide general recommendations on the subsurface conditions relative to the project civil engineer preparation for his proposed remediation design of the QUAD area.

Field Exploration and Subsurface Conditions

Twenty-two (22) hand auger borings with associated dynamic cone penetrometer testing were advanced to depths of between 1.0 foot (auger refusal) and 3 feet below the existing subgrade elevation. The hand auger boring locations were established in the field by using the drawing provided along with our site reconnaissance observation. The approximate locations are shown on the attached Figure 1. The subgrade soils were accessed by removing the concrete pavers in select areas or the hand auger borings were performed in grass/landscaped area adjacent to the paved area. After the field work was performed, the bore holes were backfilled soil cuttings and/or crushed stone. Where applicable, locations where the pavers were removed to access the subgrade, were backfilled as noted above and the paver replaced and reset.

The borings were advanced by manually twisting a sharpened steel auger into the soil. At regular intervals, the soils were tested with a dynamic cone penetrometer to provide quantitative data about the soil strength. The dynamic cone penetrometer (DCP) is an instrument composed of a conical point driven with blows from a 15-pound hammer-weight falling 20 inches. The point is driven into the soil in three increments of 1-3/4 inches. The number of hammer blows required to drive each increment is recorded. The average number of blows of the final two increments is an index to soil strength and bearing capacity. The subsurface soils encountered were examined and classified by our field personnel. The Hand Auger Boring Records are presented in the Appendix of this report. The boring locations referenced in this report and shown on the figures and field records should be considered approximate.

Subsurface Conditions

The elements composing the subsurface conditions at the hand auger boring locations consisted of either concrete pavers or a maintained grass/landscaped surface. Beneath the concrete pavers, a layer of crushed stone approximately 2 inches to 10 inches was encountered. However, this crushed stone was noted to be contaminated with soil fines, as such, the measured depths are approximate as it was difficult to determine the actual depth due to the contamination. It also appeared that several locations did not have any crushed stone.

The subgrade soil generally consisted of a reddish brown/tan clayey, very silty sand and sandy clayey silt. Due to the disturbed conditions of the soil in the hand auger bucket, it was difficult to discern the difference between fill and residual soil. The fill and residual soils have similar appearance, and the transition was not easily identifiable. No compaction testing data or field records of fill placement were available for our review. Based on the penetrometer (DCP) resistance values that ranged from 3 to 25+ blows per increment, the existing fill generally appears to have received some degree of compactive effort during original placement. Some of the soils interpreted as fill soil were noted to have scattered rock fragments in the soil matrix. The scattered rock fragments within the soil matrix may have elevated the resistance values higher than would account for the strength and density of the soils.

Material sufficiently hard to cause refusal to our hand auger equipment was encountered in several of the hand auger borings at depth of between 1 foot and 1.5 feet, respectively below the existing surface grade. Refusal may result from boulders, lenses, ledges, or layers of relatively hard rock underlain by partially weathered rock or residual soil or may represent the surface of relatively continuous bedrock. In this case, refusal is believed to have resulted from rocks and rock fragments within the soil matrix interpreted to be fill. Power drilling procedures and or test pit excavations are required to penetrate refusal materials and determine the material character and continuity. Power drilling or test pit excavations was beyond the scope of this exploration. Although refusal materials were encountered in several hand auger borings, excavation can likely be accomplished using conventional earth moving equipment. There is no indication that difficult excavation will be encountered (though it can never be ruled out completely).

Ground water was not encountered within the depths of the hand auger borings at the time of drilling or when the borings were backfilled at the end of the day. Because the hand auger borings were located in an active campus area, the hand auger borings were backfilled shortly after drilling thus precluding 24-hour ground water level measurements. Ground-water levels may fluctuate several feet with seasonal and rainfall variations and the adjacent drainage features, such as building down spouts and surface water runoff from adjacent areas. Normally, the highest ground-water levels occur in late winter and spring and the lowest levels occur in late summer and fall. Ground water levels may also fluctuate due to construction activity.

Laboratory Testing

During our study, soil samples were visually examined in the field, and classifications were confirmed by re-examination in our Arden office. The laboratory testing performed is described below, the results of which are summarized in Table 1 below.

- Natural moisture content: The moisture content of the soil is the ratio, expressed as a percentage, of the weight of water in a given mass of soil to the weight of the soil particles and was determined in accordance with ASTM D 2216.
- The percentage of fine-grained particles present in selected samples was determined by passing the samples through a No. 200 mesh sieve. The percent by weight passing the sieve is the percentage of fines or portion of the sample in the silt and clay size range. This test was conducted in accordance with ASTM D 1140.
- Atterberg-limits testing was done on the bulk sample to determine the soil plasticity characteristics. The Plasticity Index (PI) is representative of this characteristic and is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL). These characteristics are determined in accordance with ASTM D 4318. The LL is the moisture content at which the soil will flow as a heavy viscous fluid. The PL is the moisture content at which the soil begins to lose its plasticity.

Certain soils swell and shrink with increases and decreases in soil moisture. The PI is related to this potential volume change ability. When such volume changes occur in soils confined beneath pavements, structural deformations can be produced. Past experience has shown that soils having a PI of less than 30 are only slightly susceptible to volume changes. Soils having a PI greater than 50 are generally very susceptible to these volume changes. Soils with a PI between these limits have moderate volume change potential. The soils tested at this site are considered to have minimal volume change potential.

Table 1 - Laboratory Test Results

Sample No.	Sample Depth (feet)	Natural Moisture (%)	% Finer than No. 200 mesh sieve	Liquid and Plastic Limits (%)		
				PL	LL	PI
HAB-2	0.5 to 1	14.9	41.6	---	---	---
HAB-5	0.5 to 1.5	14.1	34.8	---	---	---
HAB-8	1 to 2	17.0	42.7	---	---	---
HAB-13	1 to 2	27.1	72.3	28	51	23
HAB-20	1 to 2	20.8	63.5	20	48	28
HAB-22	1 to 3	20.2	59.7	---	---	---

Conclusion and Recommendations

Based on the field data collected to date and the limited laboratory testing performed along with our experience with similar projects, the soils within the depth of interest generally consist of low to moderate consistency fill soils. It is anticipated that the encountered conditions will generally be conducive for support of the proposed pavers. However, some removal and replacement of the existing fill soils should be expected to be required. Therefore, it is recommended that an allowance be budgeted to perform remedial repair on the existing soils. As such, we offer the following recommendation to provide a more uniform subgrade surface to reduce the potential for future settlements, along with providing a suitable subgrade for the anticipated loading, which we understand would mainly include pedestrian foot traffic, occasional maintenance vehicles (i.e., light duty pickup trucks) and infrequent traffic for fire apparatus access (i.e., fire trucks). We have also not been informed of the paver design section at the time this report was prepared; however, based on our correspondence and experience with similar projects, we have assumed that the existing pavers would be reused or new similar pavers used and that the new section would include at least a 1-inch-thick nominal layer of bedding sand overlying the competent subgrade. Please let us know if this is not the case.

The provided recommendations are contingent on a BLE representative observing that the soils encountered are consistent with the conditions encountered in the hand auger borings. This observation and testing will document that the assumed site conditions are present and allow recommendations for any needed adjustments to be made at specific locations. As with any previously placed, fill material, there remains the possibility of encountering unexpected conditions during construction. These can normally be addressed by routine methods at the time of construction, with recommendations provided by BLE.

The following recommendation are provided to construct a suitable subgrade for the subject project. However, stabilization measures could vary and will also be dependent on the weather conditions during construction. As such, BLE should be on-site at the time of construction to evaluate and document the exposed subgrade conditions are similar to what was encountered during our limited exploration and to provide any needed adjustments to the recommendations present below based on the current subgrade conditions. It is also possible that these limited hand auger borings may not fully represent the conditions across the entire site. Since the site was previously developed, unexpected conditions, such as buried debris, loose/soft fill soils and/or abandoned utilities with uncompacted backfill may be present between the boring locations.



We recommend that the area to provide support for the new paver section be undercut a minimum of 8 inches below the design subgrade elevation. However, in areas where soft/loose conditions are encountered, it will be necessary to deepen the undercut to completely encompass these areas (if encountered). The fine-grained soils encountered in the hand auger borings will be sensitive to disturbance from construction activity and water seepage. If precipitation occurs during construction, the near-surface clayey silty soils will increase in moisture content and become more susceptible to disturbance. Construction activity should be monitored and limited if the construction activity is causing subgrade disturbance. BLE can assist with monitoring and developing additional recommendations to aid in limiting subgrade disturbance, if this occurs. After undercutting, proofrolling should be performed with a fully loaded tandem-axle dump truck. Proofrolling should be performed after a suitable period of dry weather to avoid degrading an otherwise acceptable subgrade and to reduce any future undercutting remedial work. Unstable materials identified should be stabilized as directed by the BLE based on conditions observed.

Once the undercutting is complete and the subgrade approved by BLE, we recommend a fabric consisting of Mirafi HP370 or approved equal, which is a geotextile intended for reinforcement and separation applications over soft/loose and moist/wet subgrade soils be deployed over the soil subgrade (the subgrade should be relatively smooth and free of ruts). The fabric should be placed taut with no wrinkles or folds, and with no void spaces between the fabric and the underlying soil subgrade. Adjacent sheets shall be overlapped a minimum of 12-inches.

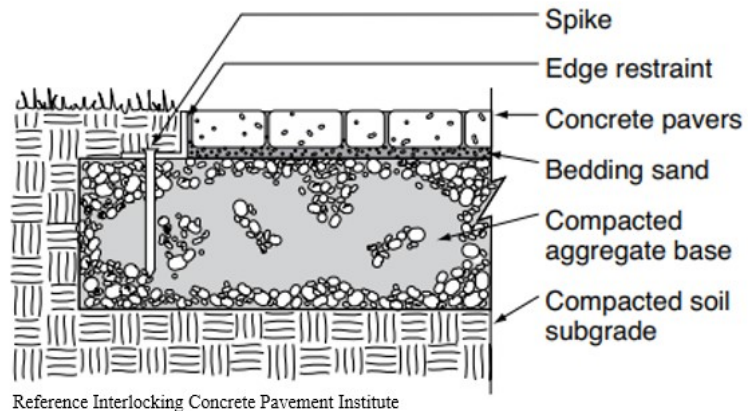
Once the fabric is placed, 8 inches of crushed aggregate base course stone (CABC) should be placed directly on top of the fabric and compacted as specified. The CABC stone should be compacted at least to 98 percent of the standard Proctor maximum dry density. Additional aggregate base course stone (if needed) should then be placed in uniform thin (4-inch thick) lifts and compacted to achieve the design subgrade elevation. The compaction should be limited to repeated, slow passes of a smooth drum roller with limited to no vibration. Vibration could draw moisture up from the subgrade causing excessive pumping and rutting. The stone base should be checked with a sufficient number of density tests to determine if adequate compaction is being achieved. Once the subgrade elevation has been achieved, evaluated and approved by BLE, the pavers can be installed as designed by others.

If there are areas where saturated soils or groundwater seepage are exposed during grading, then subsurface drainage for those areas should be provided with subsurface trench drains that are routed to a suitable outfall outside of the paver area or into the storm drain system as recommended by the Civil Engineer. A typical subsurface trench drain would consist of a small, excavated trench backfilled with NCDOT #57 stone wrapped in geotextile filter fabric with a perforated pipe. The use of edge drains could also be utilized.

We understand that the grade of the subject paver area is to remain essentially unchanged. However, we recommend that the site grades of the adjacent landscaped areas and remediated paver area be sloped to provide adequate drainage, particularly in areas that pond water, as such some areas may be raised slightly to adjust for these grade changes. Incidentally, any existing aggregate materials beneath the pavers will generally be removed as part of the undercutting. Any of the existing aggregate that remains does not substitute for any part of the thickness of new ABC required for the new section. The existing aggregate can be reused as general-purpose structural fill if any is needed for the grading. The aggregate fill should not be re-used in landscaped areas as fill material to raise grade.

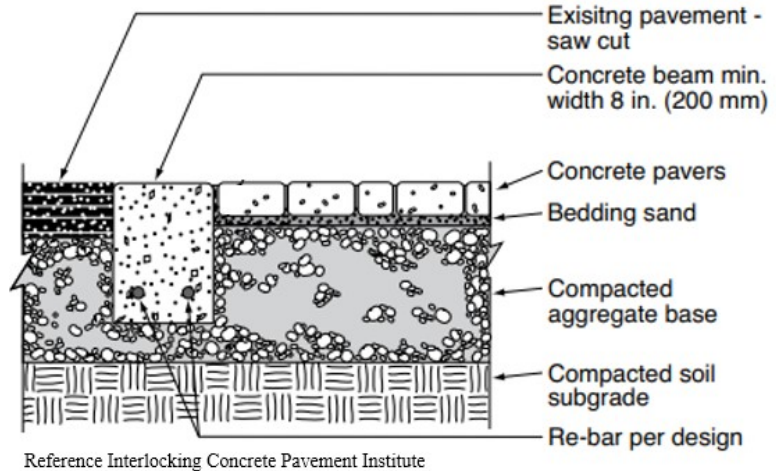
Adequate positive drainage should be provided during construction and maintained throughout the life of the project to prevent an increase in moisture content of the pavement backfill materials. Surface water drainage should also be controlled. As such, the remediation should also be supplemented by providing adequate drainage for landscaped areas, planters, walkways and other surface water flow from adjacent areas. It is anticipated that a number of new drainage structures will be needed.

Edge restraints are an essential component to maintain horizontal interlock of the pavers. Restraints hold the pavers tightly together, enabling consistent interlock of the units across the pavement section. They prevent spreading of the pavers from horizontal forces. By providing lateral resistance, they maintain continuity and interlock among the paving units. Aluminum, steel, or concrete are typical edge restraints.



A typical edge restraint section using metal edging is shown. Other edges restraints methods are available for use. Edge restraints should be in accordance with Interlocking Concrete Pavement Institute.

In addition, based on our site observations, the pavers will abut another pavement type (i.e., concrete sidewalk) in several areas. As such, to provide a suitable transition, we recommend that a concrete beam be placed against the adjacent pavement as shown in the typical section to the right. The beam prevents horizontal creep of the pavers and undermining of the adjacent pavement section.



The surface of subgrade can deteriorate and lose its support capabilities when exposed to environmental changes and construction activity. We recommend that areas that have deteriorated or softened due to environmental changes or construction activity be recompacted prior to construction of the design sections. Recomposition of subgrade surfaces and compaction of backfill should be checked with a sufficient number of density tests to determine if adequate compaction is being achieved.

It is recommended that Bunnell-Lammons Engineering be provided the opportunity to make a general review of the plans and specifications prepared from the recommendations presented in this report. We would then suggest any modifications so that our recommendations are properly interpreted and implemented.



Our limited evaluation of the existing soil conditions has been based on our understanding of the project information and field observations, as well as our experience on similar projects. The general subsurface conditions utilized in our evaluation has been based on interpolation of the subsurface data between the widely spaced hand auger borings. If the project information is incorrect or the location (horizontal or vertical) and/or dimensions are changed, please contact us so that our recommendations can be reviewed. The discovery of site or subsurface conditions during construction which deviate from the data obtained for this evaluation should be reported to us for our evaluation. The methods utilized to explore the subsurface conditions do not provide sufficient data for evaluation of deeper soils within the zone of influence for the proposed structure. If loose or weak soils or deleterious materials are located below the limits of our testing, unacceptable total and differential settlements may occur in the completed structures.

Closing

We appreciate the opportunity to be of service to you. If you have any questions concerning our observations, conclusions and recommendations as presented in this report, please do not hesitate in contacting us.

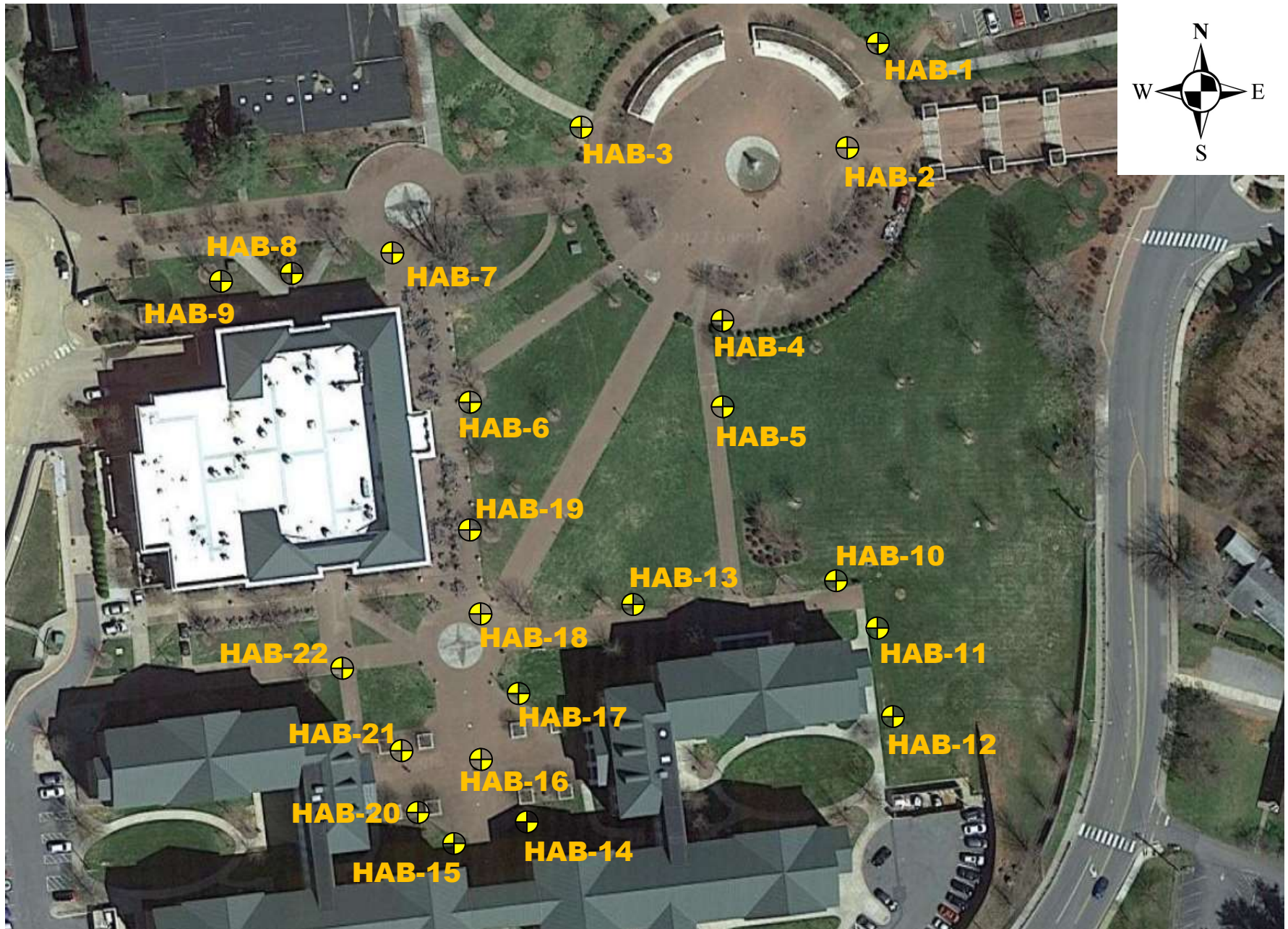
Sincerely,
BUNNELL-LAMMONS ENGINEERING, INC.
BLE NC License No. C-1538

Sam C. Interlicchia
Project Manager



James J. Belger, P.E.
Senior Engineer
North Carolina Registered 023614

Attachments: Hand Auger Boring Location Plan
Hand Auger Borings Logs
Laboratory Test Reports



Approximate Hand Auger Boring Location

Reference: Google Earth Pro

No Scale



**BUNNELL
LAMMONS
ENGINEERING**

Drawn By: SCI

Date: Aug 2022

Central Plaza Drainage & Landscape
Improvements Project
Western Carolina University
BLE Project No. J22-18248-01

Hand Auger Boring
Location Plan

Figure No.
1



Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-1	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	8"	Crushed stone	---
8"	1.5'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	18-25+
Hand auger boring refusal at 1.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-2	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	3"	Crushed stone	---
3"	3'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	12-14-14 5-5-4 3-6-7
Hand auger boring terminated at 3 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			



Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-3	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Grass/Topsoil/Roots	---
4"	2.0'	Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	11-16-3 10-15-16 25+
Hand auger boring refusal at 1.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-4	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
0	4"	Grass/Topsoil/Roots	---
4"	1.5'	Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	15-15-8
Hand auger boring refusal at 1.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-5	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	5"	Crushed stone	---
5"	2.0'	Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	6-6-8 5-8-11
Hand auger boring terminated at 2 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-6	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	6"	Crushed stone	---
6"	1.5'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	9-20-25+
Hand auger boring refusal at 1.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-7	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	7"	Crushed stone	---
7"	1.5'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	25+
Hand auger boring refusal at 1.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-8	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	10"	Crushed stone	---
10"	1.0'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	25+
Hand auger boring refusal at 1.0 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-9	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0	2"	Crushed Stone	---
2"	2.5'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	7-6-6 7-7-9 8-9-8
Hand auger boring terminated at 2.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-10	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	4"	Crushed stone	---
4"	6"	Brown Clayey, very silty Sand w/ scattered crushed stone (fill)	25+
Hand auger boring refusal at 0.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling. Boring offset similar refusal, believed to be rock fragments			



Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-11	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
0	3"	Grass/Topsoil/Roots	---
3"	1.5'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	14-14-25
Hand auger boring refusal at 1.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-12	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
0	4"	Grass/Topsoil/Roots	---
4"	1.0'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	8-25+
Hand auger boring refusal at 1.0 foot.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			





Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-13	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
0	6"	Grass/Topsoil/Roots	---
6"	1.5'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	10-11-25
Hand auger boring refusal at 1.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-14	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	1.0'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	5-7-7 25+
Hand auger boring refusal at 1.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-15	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	4"	Crushed stone	---
4"	1.5'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	6-8-9 4-5-6
Hand auger boring refusal at 1.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-16	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	3"	Crushed stone	---
3"	1.5'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	5-4-15 25+
Hand auger boring refusal at 1.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-17	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
0"	8"	Grass/Topsoil/Roots	---
8"	1.0'	Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	8-14-25
Hand auger boring refusal at 1.0 foot.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-18	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	4"	Crushed stone	---
4"	2.0'	Reddish/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	3-4-4 5-7-10
Hand auger boring terminated at 2 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			



Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-19	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	5"	Crushed stone	---
5"	2.0'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	6-8-10 6-10-11
Hand auger boring terminated at 2 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-20	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	1.5'	Reddish Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	4-4-5 25+
Hand auger boring refusal at 1.5 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			



Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-21	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
---	---	Paver	---
0"	2"	Crushed stone	---
2"	2.0'	Brown/Tan very silty Sand w/ scattered crushed stone (fill)	7-7-8 11-11-8
Hand auger boring terminated 2 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			

Hand Auger Boring Log

Job Name: Central Plaza Improvements		Hand Auger Boring Number: HAB-22	
Job Number: J22-18248-01		Date Logged: Aug 2022	
Approximate Surface Elevation: ---±		Logged By: KJ / JW / JB / AP	
Depth		Stratum Description	Dynamic Cone Penetrometer blows/increment (1 st - 2 nd - 3 rd)
From	To		
0"	4"	Grass/Topsoil/Roots	---
4"	3.0'	Brown/Tan Clayey, very silty Sand w/ scattered crushed stone (fill)	4-5-5 7-8-8 7-6-8
Hand auger boring terminated at 3 feet.			
Remarks and Notes: Groundwater not observed at time of excavation or backfilling.			



LABORATORY % FINER #200 DETERMINATION
(ASTM D1140)

SAMPLE ID.	DEPTH (FT)		TOTAL WEIGHT (g)	WEIGHT RET. #200 (g)	% FINER #200
HAB-2		1.0'	193.2	112.8	41.6
HAB-5		1.5'	197.2	128.6	34.8
HAB-8		2.0'	193.4	110.8	42.7
HAB-13	1.0	2.0	177.2	49.1	72.3
HAB-20	1.0	2.0	204.2	74.6	63.5
HAB-22	1.0	3.0	225.7	90.9	59.7

JOB NAME: WCU CENTRAL PLAZA
JOB NO.: J22-18248-01
DATE: 8/25/2022

TESTED BY: JR
CHECKED BY: PY IV

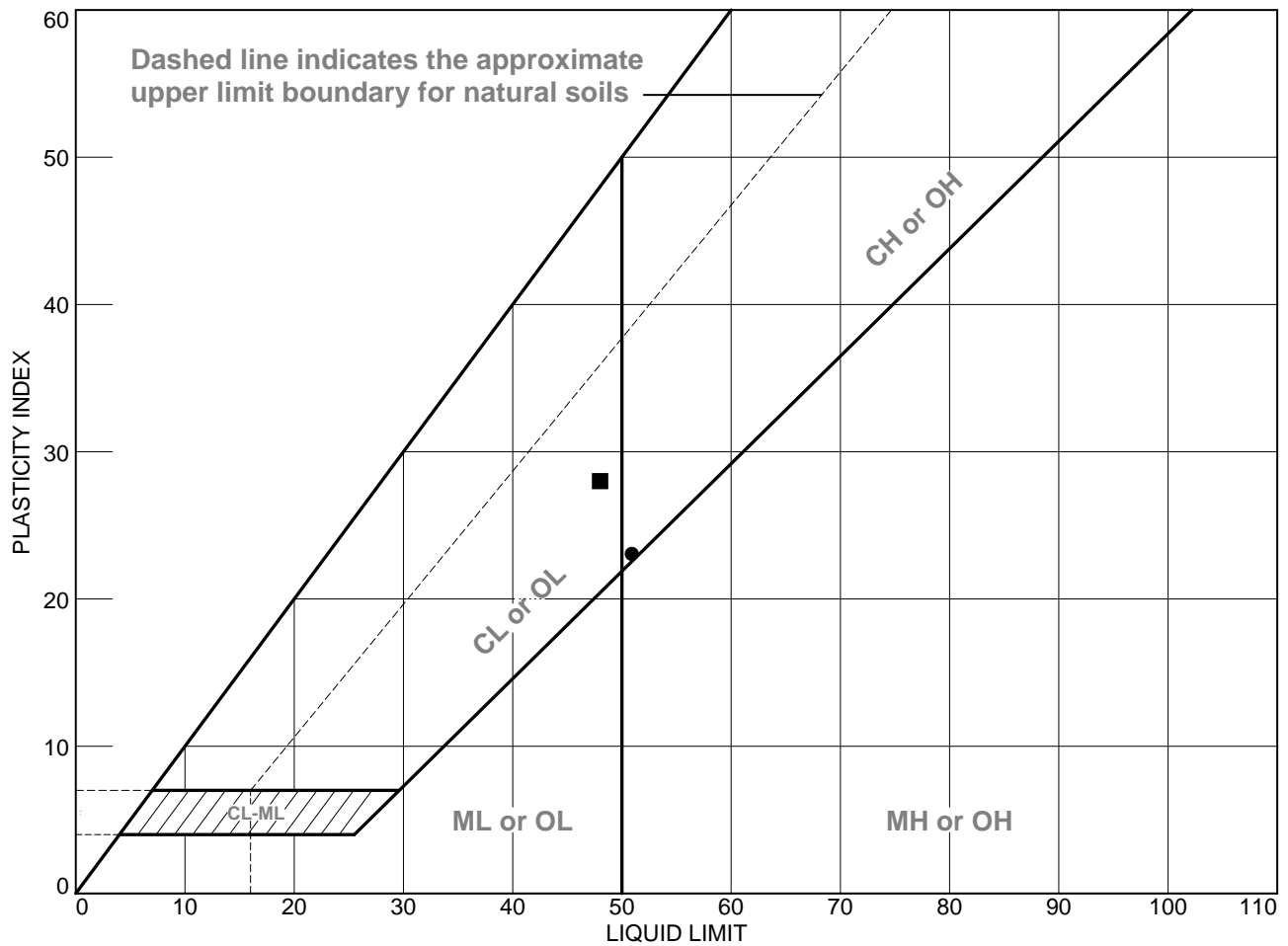
LABORATORY MOISTURE CONTENT DETERMINATION
(ASTM D2216)

SAMPLE ID.	DEPTH (Ft)		WET WEIGHT (g)	DRY WEIGHT (g)	MOISTURE CONTENT %
HAB-2		1'	222.0	193.2	14.9
HAB-5		1.5'	225.0	197.2	14.1
HAB-8		2.0'	226.3	193.4	17.0
HAB-13	1.0	2.0	225.3	177.2	27.1
HAB-20	1.0	2.0	246.7	204.2	20.8
HAB-22	1.0	3.0	271.2	225.7	20.2

JOB NAME: WCU CENTRAL PLAZA
JOB NO.: J22-18248-01
DATE: 8/25/2022

TESTED BY: JR
CHECKED BY: PY IV

Liquid and Plastic Limits Test Report (ASTM D4318)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●		HAB-13	1.0-2.0	27.1	28	51	23	
■		HAB-20	1.0-2.0	20.8	20	48	28	

Bunnell Lammons Engineering, Inc.

Greenville, SC

Client: WCU

Project: WCU Central Plaza

Project No.: 18248.01

Figure

Tested By: JM Checked By: PY IV

This Page Intentionally Blank

SECTION 0700 **ALLOWANCES**

Certain items in the Contract Documents are identified, defined and described as allowance items. The following identified allowances shall be included in the lump sum base bid amount for each area of work identified and in lump sum base bid amount for general allowances which can apply in any or all work areas. The final payment for each of these items will be adjusted to the actual final quantities of work for each item, as measured by the engineer, and will be paid for at the unit price bid for each item. See also *Section 0800 Unit Prices*.

BID ITEM – REPAIR AREA “A” ALLOWANCES:

In addition to all other labor, materials, supplies, work, incidentals and appurtenances to be included in the lump sum bid price to complete Repair Area A, also include the following allowances for unit priced items in the lump sum bid price for Repair Area A:

Plastic Drainage Structure with Ductile Iron Grate Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **One (1) Each allowance for “Plastic Drainage Structure with Ductile Iron Grate”** shall be included in the lump sum bid price for Repair Area A.

8” HDPE Storm Drain Pipe Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. An **Eight (8) Linear Feet allowance for “8” HDPE Storm Drain Pipe”** shall be included in the lump sum bid price for Repair Area A.

Tie Into Existing Storm Drain Pipe Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **One (1) Each allowance for “Tie Into Existing Storm Drain Pipe”** shall be included in the lump sum bid price for Repair Area A.

BID ITEM – REPAIR AREA “B” ALLOWANCES:

In addition to all other labor, materials, supplies, work, incidentals and appurtenances to be included in the lump sum bid price to complete Repair Area B, also include the following allowances for unit priced items in the lump sum bid price for Repair Area B:

Standard Concrete Sidewalk Repair Allowance: Refer to *Concrete Pavements, Curbs and Sidewalks – Section 02770* for a complete description. A **Thirteen and One Half (13.5) Square Yard allowance for “Standard Concrete Sidewalk Repair”** shall be included in the lump sum bid price for Repair Area B.

**INTENTIONALLY
OMITTED**

BID ITEM – REPAIR AREA “C” ALLOWANCES:

In addition to all other labor, materials, supplies, work, incidentals and appurtenances to be included in the lump sum bid price to complete Repair Area C, also include the following allowances for unit priced items in the lump sum bid price for Repair Area C:

Plastic Drainage Structure with Ductile Iron Grate Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Five (5) Each allowance for “Plastic Drainage Structure with Ductile Iron Grate”** shall be included in the lump sum bid price for Repair Area C.

8” HDPE Storm Drain Pipe Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Two Hundred and Seventeen (217) Linear Feet allowance for “8” HDPE Storm Drain Pipe”** shall be included in the lump sum bid price for Repair Area C.

Tie Into Existing Storm Drain Structure Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Three (3) Each allowance for “Tie Into Existing Storm Drain Structure”** shall be included in the lump sum bid price for Repair Area C.

6” Underdrain Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Two Hundred and Ninety Four (294) Linear Feet allowance for “6” Underdrain”** shall be included in the lump sum bid price for Repair Area C.

Brick Paver Removal and Reset Allowance: Refer to *Brick Pavers and Incidentals – Section 02780* for a complete description. A **Three Hundred and Thirty Five (335) Square Yard allowance for “Brick Paver Removal and Reset”** shall be included in the lump sum bid price for Repair Area C.

Hidden Concrete Edge Support Allowance: Refer to *Brick Pavers and Incidentals – Section 02780* for a complete description. A **Four Hundred and Twenty Two (422) Linear Feet allowance for “Hidden Concrete Edge Support”** shall be included in the lump sum bid price for Repair Area C.

BID ITEM – REPAIR AREA “D” ALLOWANCES:

In addition to all other labor, materials, supplies, work, incidentals and appurtenances to be included in the lump sum bid price to complete Repair Area D, also include the following allowances for unit priced items in the lump sum bid price for Repair Area D:

Brick Paver Removal and Reset Allowance: Refer to *Brick Pavers and Incidentals – Section 02780* for a complete description. A **Fifteen (15) Square Yard allowance for “Brick Paver Removal and Reset”** shall be included in the lump sum bid price for Repair Area D.

BID ITEM – REPAIR AREA “E” ALLOWANCES:

In addition to all other labor, materials, supplies, work, incidentals and appurtenances to be included in the lump sum bid price to complete Repair Area E, also include the following allowances for unit priced items in the lump sum bid price for Repair Area E:

NCDOT Standard 840.46 Concrete Drainage Structure with Cast Iron Grate Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **One (1) Each allowance for “NCDOT Standard 840.46 Concrete Drainage Structure with Cast Iron Grate”** shall be included in the lump sum bid price for Repair Area E.

8” HDPE Storm Drain Pipe Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Thirty Seven (37) Linear Feet allowance for “8” HDPE Storm Drain Pipe”** shall be included in the lump sum bid price for Repair Area E.

Tie Into Existing Storm Drain Structure Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Two (2) Each allowance for “Tie Into Existing Storm Drain Structure”** shall be included in the lump sum bid price for Repair Area E.

6” Underdrain Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Thirty Three (33) Linear Feet allowance for “6” Underdrain”** shall be included in the lump sum bid price for Repair Area E.

Brick Paver Removal and Reset Allowance: Refer to *Brick Pavers and Incidentals – Section 02780* for a complete description. A **Thirty Seven (37) Square Yard allowance for “Brick Paver Removal and Reset”** shall be included in the lump sum bid price for Repair Area E.

Hidden Concrete Edge Support Allowance: Refer to *Brick Pavers and Incidentals – Section 02780* for a complete description. A **Twenty Nine (29) Linear Feet allowance for “Hidden Concrete Edge Support”** shall be included in the lump sum bid price for Repair Area E.

BID ITEM – REPAIR AREA “F” ALLOWANCES:

In addition to all other labor, materials, supplies, work, incidentals and appurtenances to be included in the lump sum bid price to complete Repair Area F, also include the following allowances for unit priced items in the lump sum bid price for Repair Area F:

6” Underdrain Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. An **Eighty Three (83) Linear Feet allowance for “6” Underdrain”** shall be included in the lump sum bid price for Repair Area F.

Brick Paver Removal and Reset Allowance: Refer to *Brick Pavers and Incidentals – Section 02780* for a complete description. A **Sixty Four (64) Square Yard allowance for “Brick Paver Removal and Reset”** shall be included in the lump sum bid price for Repair Area F.

Hidden Concrete Edge Support Allowance: Refer to *Brick Pavers and Incidentals – Section 02780* for a complete description. A **Ninety Eight (98) Linear Feet allowance for “Hidden Concrete Edge Support”** shall be included in the lump sum bid price for Repair Area F.

BID ITEM – REPAIR AREA “G” ALLOWANCES:

In addition to all other labor, materials, supplies, work, incidentals and appurtenances to be included in the lump sum bid price to complete Repair Area G, also include the following allowances for unit priced items in the lump sum bid price for Repair Area G:

NCDOT Standard 840.46 Concrete Drainage Structure with Cast Iron Grate Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **One (1) Each allowance for “NCDOT Standard 840.46 Concrete Drainage Structure with Cast Iron Grate”** shall be included in the lump sum bid price for Repair Area G.

Plastic Drainage Structure with Ductile Iron Grate Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Three (3) Each allowance for “Plastic Drainage Structure with Ductile Iron Grate”** shall be included in the lump sum bid price for Repair Area G.

12” HDPE Storm Drain Pipe Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Sixty (60) Linear Feet allowance for “12” HDPE Storm Drain Pipe”** shall be included in the lump sum bid price for Repair Area G.

8” HDPE Storm Drain Pipe Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Seventy Three (73) Linear Feet allowance for “8” HDPE Storm Drain Pipe”** shall be included in the lump sum bid price for Repair Area G.

Tie Into Existing Storm Drain Pipe Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **One (1) Each allowance for “Tie Into Existing Storm Drain Pipe”** shall be included in the lump sum bid price for Repair Area G.

6" Underdrain Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Two Hundred and Eighty Five (285) Linear Feet allowance for “6” Underdrain** shall be included in the lump sum bid price for Repair Area G.

Brick Paver Removal and Reset Allowance: Refer to *Brick Pavers and Incidentals – Section 02780* for a complete description. A **Two Hundred and Sixty (260) Square Yard allowance for “Brick Paver Removal and Reset”** shall be included in the lump sum bid price for Repair Area G.

Hidden Concrete Edge Support Allowance: Refer to *Brick Pavers and Incidentals – Section 02780* for a complete description. A **One Hundred and Fifty Two (152) Linear Feet allowance for “Hidden Concrete Edge Support”** shall be included in the lump sum bid price for Repair Area G.

Slotted Edge Drain Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **One Hundred and Fifty Two (152) Linear Feet allowance for “Slotted Edge Drain”** shall be included in the lump sum bid price for Repair Area G.

Slotted Edge Drain Clean-Out Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **One (1) Each allowance for “Slotted Edge Drain Clean-out”** shall be included in the lump sum bid price for Repair Area G.

Asphalt Pavement Repair Allowance: Refer to *Asphalt Pavements – Section 02740* for a complete description. A **Twenty Four (24) Linear Feet allowance for “Asphalt Pavement Repair”** shall be included in the lump sum bid price for Repair Area G.

Concrete Curb & Gutter Repair Allowance: Refer to *Concrete Pavements, Curbs and Sidewalks – Section 02770* for a complete description. A **Twelve (12) Linear feet allowance for “Concrete Curb & Gutter Repair”** shall be included in the lump sum bid price for Repair Area G.

BID ITEM – REPAIR AREA “H” ALLOWANCES:

In addition to all other labor, materials, supplies, work, incidentals and appurtenances to be included in the lump sum bid price to complete Repair Area H, also include the following allowances for unit priced items in the lump sum bid price for Repair Area H:

Drainage Cuts in Existing Concrete Curb: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Fifteen (15) Each allowance for “Drainage Cuts in Existing Concrete Curb”** shall be included in the lump sum bid price for Repair Area H.

4" Underdrain Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Ninety Nine (99) Linear Feet allowance for “4” Underdrain** shall be included in the lump sum bid price for Repair Area H.

Tie Into Existing Storm Drain Structure Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Two (2) Each allowance for “Tie Into Existing Storm Drain Structure”** shall be included in the lump sum bid price for Repair Area H.

BID ITEM – REPAIR AREA “I” ALLOWANCES:

In addition to all other labor, materials, supplies, work, incidentals and appurtenances to be included in the lump sum bid price to complete Repair Area I, also include the following allowances for unit priced items in the lump sum bid price for Repair Area I:

Stamped and Stained Decorative Concrete Sidewalk Allowance: Refer to *Concrete Pavements, Curbs and Sidewalks – Section 02770* for a complete description. A **Fifty Three (53) Square Yard allowance for “Stamped and Stained Decorative Concrete Sidewalk”** shall be included in the lump sum bid price for Repair Area I.

BID ITEM – REPAIR AREA “J” ALLOWANCES:

In addition to all other labor, materials, supplies, work, incidentals and appurtenances to be included in the lump sum bid price to complete Repair Area J, also include the following allowances for unit priced items in the lump sum bid price for Repair Area J:

Plastic Drainage Structure with Ductile Iron Grate Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Three (3) Each allowance for “Plastic Drainage Structure with Ductile Iron Grate”** shall be included in the lump sum bid price for Repair Area J.

8” HDPE Storm Drain Pipe Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Twenty One (21) Linear Feet allowance for “8” HDPE Storm Drain Pipe”** shall be included in the lump sum bid price for Repair Area J.

Tie Into Existing Storm Drain Pipe Allowance: Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description. A **Three (3) Each allowance for “Tie Into Existing Storm Drain Pipe”** shall be included in the lump sum bid price for Repair Area J.

Concrete V-Shaped Ditch Allowance: Refer to *Concrete Pavements, Curbs and Sidewalks – Section 02770* for a complete description. A **Nineteen (19) Linear Feet allowance for “Concrete V-Shaped Ditch”** shall be included in the lump sum bid price for Repair Area J.

BID ITEM – GENERAL ALLOWANCES “K”:

In addition to all other labor, materials, supplies, work, incidentals and appurtenances to be included in the lump sum bid price to complete all work, also include the following allowances for unit priced items in the lump sum bid price for Bid Item – “K” General Allowances: Portions of General Allowances may be applied to work performed under any one or combination of Bid Item Repairs A through J, as deemed necessary and as approved in writing by the Engineer.

“Rock Excavation” Allowance: Refer to *Rock Excavation – Section 02090* for a complete description. A **Ten (10) cubic yard allowance for “rock excavation”** shall be included in the total bid price for Bid Item “K” - General Allowances.

“Undercut Excavation with Stone Backfill” Allowance: Refer to *Earthwork – Section 02200* for a complete description. A **Three Hundred (300) cubic yard allowance for “undercut excavation with stone backfill”** shall be included in the total bid price for Bid Item “K” - General Allowances.

“Undercut Excavation with Soil Backfill” Allowance: Refer to *Earthwork – Section 02200* for a complete description. A **Three Hundred (300) cubic yard allowance for “undercut excavation with soil backfill”** shall be included in the total bid price for Bid Item “K” - General Allowances.

END OF SECTION

This Page Intentionally Blank

SECTION 0800

Unit Prices

The actual quantities of work for certain items included in the lump sum base bid may vary from the quantities included in the base bid due to site specific conditions and the owner may authorize the addition of unit priced items as the work progresses. Should the final quantities, as measured by the engineer, vary from those included in bid allowances or should the contractor be authorized in writing to add work described by unit priced items, then the final payment for these items will be adjusted, either up or down, to reflect the actual work performed, based on the unit price amounts stipulated by the bidder in the Form of Proposal. No additional contract time will be given for adjustments to the work based on items having unit price bids. Unit bid prices will remain in effect for the duration of the contract until all work is completed. The following paragraphs describe each of the unit price items and, in addition to all materials, labor, supplies, cost of delivery, installation, insurance, taxes, overhead, and profit, define what is to be included in each of the unit bid prices. **Also see Allowances – Section 0700 for quantities of each unit price item to include in the base bid items.**

- U1 Brick Paver Removal and Reset:** shall be paid for at the unit price per SQUARE YARD as described in *Brick Pavers & Incidentals – Section 02780*. Refer to *Brick Pavers & Incidentals – Section 02780*. for a complete description.
- U2 Stamped and Stained Decorative Concrete Sidewalk:** shall be paid for at the unit price per SQUARE YARD as described in *Concrete Pavements, Curbs and Sidewalks – Section 02770*. Refer to *Concrete Pavements, Curbs and Sidewalks – Section 02770* for a complete description.
- U3 Hidden Concrete Edge Support:** shall be paid for at the unit price per LINEAR FOOT as described in *Brick Pavers & Incidentals – Section 02780*. Refer to *Brick Pavers & Incidentals – Section 02780*. for a complete description.
- U4 Plastic Drainage Structure with Ductile Iron Grate:** shall be paid for at the unit price per EACH as described in *Storm Drainage & Incidentals – Section 02630*. Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description.
- U5 NCDOT Standard 840.46 Concrete Drainage Structure with Cast Iron Grate:** shall be paid for at the unit price per EACH as described in *Storm Drainage & Incidentals – Section 02630*. Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description.
- U6 12” HDPE Storm Drain Pipe:** shall be paid for at the unit price per LINEAR FOOT as described in *Storm Drainage & Incidentals – Section 02630*. Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description.
- U7 8” HDPE Storm Drain Pipe:** shall be paid for at the unit price per LINEAR FOOT as described in *Storm Drainage & Incidentals – Section 02630*. Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description.
- U8 Tie Into Existing Storm Drain Pipe:** shall be paid for at the unit price per EACH as described in *Storm Drainage & Incidentals – Section 02630*. Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description.
- U9 Tie Into Existing Storm Drain Structure:** shall be paid for at the unit price per EACH as described in *Storm Drainage & Incidentals – Section 02630*. Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description.

- U10 6" Underdrain:** shall be paid for at the unit price per LINEAR FOOT as described in *Storm Drainage & Incidentals – Section 02630*. Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description.
- U11 4" Underdrain:** shall be paid for at the unit price per LINEAR FOOT as described in *Storm Drainage & Incidentals – Section 02630*. Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description.
- U12 Slotted Edge Drain:** shall be paid for at the unit price per LINEAR FOOT as described in *Storm Drainage & Incidentals – Section 02630*. Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description.
- U13 Slotted Edge Drain Clean-out:** shall be paid for at the unit price per EACH as described in *Storm Drainage & Incidentals – Section 02630*. Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description.
- U14 Drainage Cuts in Existing Concrete Curb:** shall be paid for at the unit price per EACH as described in *Storm Drainage & Incidentals – Section 02630*. Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description.
- U15 Concrete V-Shaped Ditch:** shall be paid for at the unit price per LINEAR FOOT as described in *Concrete Pavements, Curbs and Sidewalks – Section 02770*. Refer to *Concrete Pavements, Curbs and Sidewalks – Section 02770* for a complete description.
- U16 Asphalt Pavement Repair:** shall be paid for at the unit price per LINEAR FOOT as described in *Asphalt Pavements – Section 02740*. Refer to *Asphalt Pavements – Section 02740* for a complete description.
- U17 Concrete Curb & Gutter Repair:** shall be paid for at the unit price per LINEAR FOOT as described in *Concrete Pavements, Curbs and Sidewalks – Section 02770*. Refer to *Concrete Pavements, Curbs and Sidewalks – Section 02770* for a complete description.
- U18 Standard Concrete Sidewalk Repair:** shall be paid for at the unit price per SQUARE YARD as described in *Concrete Pavements, Curbs and Sidewalks – Section 02770*. Refer to *Concrete Pavements, Curbs and Sidewalks – Section 02770* for a complete description.
- U19 Rock Excavation:** shall be paid for at the unit price per CUBIC YARD as described in *Rock Excavation – Section 02090*. Refer to *Rock Excavation – Section 02090* for a complete description.
- U20 Undercut Excavation with Stone Backfill:** shall be paid for at the unit price per CUBIC YARD as described in *Earthwork – Section 02200*. Refer to *Earthwork – Section 02200* for a complete description.
- U21 Undercut Excavation with Soil Backfill:** shall be paid for at the unit price per CUBIC YARD as described in *Earthwork – Section 02200*. Refer to *Earthwork – Section 02200* for a complete description.
- U22 4 ft ID Precast Conflict Manhole:** shall be paid for at the unit price per EACH as described in *Storm Drainage & Incidentals – Section 02630*. Refer to *Storm Drainage & Incidentals – Section 02630* for a complete description.

END OF SECTION

SECTION 02090 **ROCK EXCAVATION**

1.0 GENERAL

1.1 Description: The Contractor shall furnish all materials, labor, equipment, supplies and incidentals necessary to complete all rock excavation in a safe manner and as required for the successful completion of the project to the satisfaction of the engineer and as shown on the plans, and as specified herein and related sections of the specifications. NO BLASTING WILL BE ALLOWED.

1.2 “Rock Excavation”, in all situations including trenches, pits and open excavations, shall be defined as the excavation of any hard, naturally occurring, solid ledge rock (igneous, metamorphic and sedimentary) which requires the use of explosives and/or special impact tools such as jackhammers, sledge hammers, chisels, or similar devices specifically designed for use in cutting or breaking rock. Rock excavation shall be as further defined in paragraphs 1.2.1 and 1.2.2.

1.2.1 Rock excavation for trenches and pits shall be defined as the removal of a formation that cannot be excavated without systematic drilling and machine mounted jack hammer that is performed only for the purposes of utility installation. In contrast, normal or earth excavation is a formation that when plowed or ripped, breaks down into small enough pieces to be easily moved, can be loaded in hauling units, and can be readily incorporated into an embankment or foundation in relatively thin layers. Boulders larger than 1 cubic yard shall be classified as rock. The Contractor, if requested, shall prove that material should be classified as trench rock excavation, by demonstration that the material cannot be removed with a backhoe equipped with a 36" bucket with rock teeth placed on a 345 hp 100,000 lb class excavator with a drawbar pull of 75,920 lb. The Contractor shall, if requested, provide equipment specification data verifying the above minimum-rated equipment will be used for demonstration purposes. Such equipment shall be in good repair and proper working condition.

1.2.2 Rock excavation in open excavations shall be defined as the removal of a formation that cannot be excavated without systematic drilling and and machine mounted jack hammer that is not for the purposes of utility installation. In contrast, normal or earth excavation is a formation that, when plowed and ripped, breaks down into small enough pieces to be easily moved, can be loaded in hauling units, and can be readily incorporated into an embankment or foundation in relatively thin layers. Boulders larger than 1 cubic yard shall be classified as rock. The Contractor, if requested shall prove that material should be classified as rock excavation, by providing a demonstration that the material cannot be ripped with a D-8 crawler tractor with 310 flywheel horsepower or equal, pulling a single-tooth ripper with ripping performed in a criss-cross pattern or against the natural bedding plane. The Contractor shall, if requested, provide equipment specification data verifying the above minimum-rated equipment will be used for demonstration purposes. Such equipment shall be in good repair and in proper working

condition. This classification does not include materials such as loose rock, concrete or other materials that can be moved by means other than drilling and machine mounted jack hammer or drilling and wedging.

Method of payment for rock excavation shall be at the quoted unit prices per cubic yard in the Bid Form. Final payment for rock excavation will be adjusted to the actual cubic yards of rock excavation performed and will be paid for at the unit price quoted for "rock excavation" in the bid form. There will be no distinction made in payment for trench rock excavation or rock excavation in open areas. Rock that the engineer has not measured and quantified by the engineer will not be paid for. It is the contractor's responsibility to coordinate and contact the engineer to measure and quantify rock a minimum of 24 hours in advance after the contractor has exposed the entire surface of the rock to be removed.

1.3 Contractor shall exercise extreme care in all rock excavation related operations as required to prevent any damage to all public or private properties, structures, utilities, facilities and residences. No jack hammering shall occur outside the hours of 8:30 a.m. to 3:30 p.m., Monday through Saturday unless approved otherwise by the engineer and any other agencies having jurisdiction. Additionally, the owner may, at their discretion impose other restrictions on the times of jack hammer operation based on scheduled activities and the other criteria.

1.4 The contractor may, at their discretion, select to engage the services of an independent, qualified seismic consultant, experienced in rock excavation techniques for similar civil and hydraulic works, to prepare rock removal plans, to supervise the installation of instruments, monitor vibration and to supervise the interpretation of recorded results. The contractor's employment and use of an independent seismic consultant will be mandantory, including all seismic monitoring and record keeping. Independent consultants shall have a minimum five years documented experience in related testing, monitoring and seismic surveys.

1.4.1 The seismic consultant shall develop project specific rock excavation plans for the contractor's use. The plan shall, at a minimum, contain a schedule of pre and post rock excavation structural surveys, a tabulation of the nearest distances to structures within the specified generated seismic influence zone, detailed safety and security measures to be implemented, the types and use of monitoring equipment, the types of equipment to be used for rock excavation and sufficient related information to safely and successfully execute rock excavation operations.

1.4.2 The seismic consultant's plan conditions or recommendations and any conditions shown on the plans or imposed herein shall not, in any way, relieve the contractor of his sole responsibility for safety, loss of life, property damage and obtaining adequate rock breakage and limiting rock breakage to within the final lines and grades necessary for the proper completion of the project.

1.5 The contractor shall use experienced operators, competent supervisors and skilled labor for all rock excavation operations.

2.0 MATERIALS

2.1 The contractor shall furnish all materials, equipment, labor and incidentals required to successfully accomplish all work to the satisfaction of the engineer and owner.

2.2 All fill materials, borrow materials, select fill, bedding materials, stone and any other materials that are, in the engineer's opinion, necessary due to rock excavation will be provided by the contractor at the contractor's sole expense. All types, grades and quality of materials used for fill, backfill, bedding or other uses associated with rock excavation shall be in accordance with other related sections of these specifications.

3.0 EXECUTION

3.1 The primary objective for rock excavation is to construct excavations where the rock outside of the excavation will be undisturbed and the shape of the excavation will conform to the lines and grades indicated on the plans or specified herein. It is the responsibility of the contractor to conduct their operations in such a manner that this objective is safely achieved.

3.1.1 Unless shown otherwise on the plans, rock shall be excavated and paid for to the following limits. Additional rock excavation beyond the limits indicated on the plans or specified herein, or associated waste material disposal, borrow material or incidentals will not be paid for and will be performed at the contractor's sole expense.

Trenches

Sidewalls:	Pipe outside diameter plus 8 inches each side calculated with trench sidewalls assumed to be vertical
Floor:	Pipe outside diameter plus 6 inches below the pipe to the lines, grades or depth indicated on the plans

Structures

Foundation:	12 inches outside and below the bearing depth of the foundation unless shown otherwise on the plans or allowed by the engineer or architect
Walls:	24 inches beyond the outermost vertical structure wall or foundation limits other than footings
Slabs:	6 inches below the concrete slab bearing elevation

Roadways

Subgrade:	Stone base course bearing elevation plus 12 inches additional depth or a minimum of 2 feet below the finished road surface elevation whichever is greater
Ditches:	Only depth as necessary to provide ditch profile specified

3.2 The contractor shall notify the owner a minimum of 48 hours in advance of jack hammering or commencing any other rock excavation related operations and obtain the owner's approval of the contractor's proposed schedule.

3.3 All loose and shattered rock or other loose material, which may endanger any structure, utility or the workers, shall be removed and the excavation site made safe before proceeding with the work. The fact that the removal of loose or shattered rock or other loose material may enlarge the excavation beyond the required limits shall not relieve the contractor of the responsibility for removal of such material and replacement of suitable materials at his sole expense.

3.4 In case damage from rock excavation occurs to existing structures, public or private properties, utilities, to any portion of the work, or to any material surrounding the project, the contractor shall remove such damaged work, repair the work, and replace the material and otherwise perform such work for repair or replacement to the satisfaction of the engineer and owner at the contractor's sole expense.

3.5 All excavated rock material and any other waste materials related to or generated by rock excavation, unless specifically stipulated on the plans to be incorporated into the project, shall be removed from the project site and disposed of offsite by the contractor at a disposal site secured and properly permitted by the contractor. All costs associated with the disposal of rock and other waste materials shall be at the contractor's sole expense with no additional cost to the owner.

3.12 The contractor shall be responsible for providing all borrow material, select fill materials, stone bedding material and any other materials needed for the proper completion of the work, to the satisfaction of the engineer, as a result of rock excavation. All costs associated with the provision of these materials, including but not limited to, the securing of suitable borrow source(s), all testing of borrow materials for suitability, all loading, hauling, unloading, placing, compacting and incidental costs and work shall be at the sole expense of the contractor. Borrow materials, stone, bedding materials and other materials needed due to or related to rock excavation shall meet the approval of the engineer and shall be in accordance with other applicable sections of these specifications.

4.0 METHOD OF MEASUREMENT & BASIS OF PAYMENT

4.1 When rock is encountered during excavation or construction, the contractor is responsible for exposing the surface of the rock, giving the engineer a minimum of 24 hours advance notice and allowing the engineer adequate time to profile the surface of the rock for use in estimating the volume removed for payment purposes. The contractor shall assist and allow the engineer adequate time to profile the rock surface prior to and following the completion of a given section or area of rock excavation. The contractor shall be responsible for implementing all necessary safety and security measures as needed to allow rock surfaces to remain exposed for measurement by the engineer. Payment for rock excavation will be made on the basis of the engineer's field measurements and associated calculated volumes based on the actual rock quantity.

4.2 Payment for rock excavation will be made to lines, grades and limits shown on the plans and specified herein. The excavation of rock beyond the specified limits, including all associated work, materials, labor and incidentals, will not be paid for and shall be corrected to the engineer's satisfaction at the contractor's expense.

4.3 The contractor shall be paid for the actual amount of rock excavation, based on the engineer's quantity measured and estimated during construction, at the unit price per cubic yard stipulated in the bid form. Payment for rock excavation shall include all labor, materials, equipment, supplies, drilling, overburden and matings, explosives, safety equipment and provisions, signing, permits, fees, seismic consultants, monitoring equipment, specialists, excavation, loading, unloading, testing of borrow sources, obtainment of borrow sources, borrow materials and placement, disposal of waste materials offsite, bedding and fill materials, stone, compaction, construction delays, damage repair and any other incidentals necessary to properly complete all rock excavation to the satisfaction of the engineer and owner.

END OF SECTION

This Page Intentionally Blank

SECTION 2110

CLEARING, GRUBBING AND DEMOLITION

1.0 GENERAL

1.1 Description: The Contractor shall furnish all materials, labor, equipment, supplies, maintenance and incidentals necessary to perform all clearing, grubbing and demolition operations as necessary to properly complete the project to the satisfaction of the engineer and owner. All clearing, grubbing and demolition shall be performed in accordance with all local, state and national codes, standards and regulations at the contractor's expense. The work of clearing, demolition and grubbing shall be performed within the project limits as indicated by the plans and as necessary for the successful completion of the project. The contractor will be solely responsible for making investigations and determining the extent of clearing, grubbing and demolition operations required prior to submitting a bid including all clearing, grubbing and demolition necessary for the proper completion of all work to the satisfaction of the engineer.

1.2 The contractor shall install all erosion control measures shown on the plans and as specified in other sections prior to commencing clearing, grubbing and demolition operations. Where necessary due to conflicts, erosion control measures shall be installed immediately following clearing and grubbing operations for a particular area of construction.

1.2.1 The contractor is responsible for carefully removing, cleaning and securely storing all pavers removed from designated areas for re-use in the work. Any excess pavers after the completion of all work, shall be turned over to the owner for their ownership and for use in future repairs and paver replacements.

1.3 The contractor shall take all the necessary measures to prevent any damage to any public or private properties, structures, utilities, facilities, etc. Should any damage occur, the contractor shall be fully responsible for making the necessary repairs or replacements, at the contractor's expense, to the satisfaction of the engineer and owner.

1.4 The contractor will be solely responsible for making investigations and determining the existence, exact locations, sizes, depths, extent and material types of all existing utilities that may be affected by project activities prior to commencing construction. All existing utilities and related facilities are not shown on the plans and the locations shown on the plans may have been approximated. Any damage incurred to existing utilities, whether shown on the plans, not shown on the plans or incorrectly shown on the plans are the responsibility of the contractor and shall be repaired to the original or better condition, to the satisfaction of the utility owner and engineer, at the sole expense of the contractor.

1.4.1 The contractor shall be responsible for coordinating all construction with all utility companies affected by the project. Except in an emergency, the contractor shall not operate any controls on any existing utility system or otherwise change or affect the operation of the utility without prior approval of the utility owner.

1.5 The contractor shall be responsible for all job site safety and security including, but not limited to, work zone traffic control and signing. The contractor shall provide and maintain adequate work zone traffic control in accordance the latest editions of the NCDOT "Standard Specifications for Roads and Structures," the NCDOT "Roadway Standard Drawings" the "Manual of Uniform Traffic Control Devices" and all site specific conditions imposed by the NCDOT local Division Office.

1.6 There shall be no burning allowed on the owner's property. All waste materials, that will not be incorporated into the work, resulting from clearing, grubbing, and demolition operations, whether natural or manmade materials, shall be disposed of, at the contractor's expense, off the owner's property in accordance with applicable regulations.

2.0 MATERIALS

2.1 The contractor shall furnish all materials, equipment, labor and incidentals required to successfully accomplish all clearing, demolition and grubbing to the satisfaction of the engineer and owner.

3.0 EXECUTION

3.1 The contractor shall perform all clearing of the project area and related areas, approved by the owner and engineer, as needed to facilitate successful construction consisting of the cutting, removal, and satisfactory disposal of all trees, vegetation, structures and foundations to be demolished, pavements and bases to be removed, utilities to be removed or abandoned and debris at the contractor's expense. The contractor shall perform all grubbing consisting of the loading, removing, hauling and properly permitted disposal of all cuttings, stumps, vegetation, organic matter, structures to be demolished and other natural or manmade debris at a location off the owner's property at the contractor's expense. All applicable permits and offsite disposal locations shall be obtained by the contractor at the contractor's expense. No additional payment will be made for clearing and grubbing work at offsite locations related to construction such as borrow sites.

3.1.1 The work of clearing, grubbing and demolition shall include, at the contractor's expense, the complete removal and offsite disposal of all below ground foundations, footings, utilities, vaults, tanks and other manmade improvements, whether abandoned or identified to be abandoned, unless specifically approved otherwise by the engineer.

3.1.2 The work of clearing, grubbing and demolition shall also include the formal abandonment of wells within the project limits that are no longer in use. The wells shall be abandoned, at the contractor's expense, in accordance with NC regulations by a certified well driller. The abandonment procedure shall include completely filling the entire well depth with 3,000 psi

cement grout and completely removing the casing to a depth of 10 feet below grade. The contractor shall submit copies of the well abandonment record to the NC Division of Environmental Management and the engineer.

3.1.3 The Owner may, at their sole discretion, maintain ownership of all materials to be removed during the demolition process, whether manmade or natural. If the Owner wishes to maintain ownership of any material, the contractor shall make all reasonable efforts to prevent damage to the salvaged materials and the contractor shall safely move the material to a location designated by the Owner on the Owner's adjacent property, yet outside of the limits of the project area. Any materials that the Owner does not wish to retain ownership of shall be properly disposed of off site, by the Contractor at the Contractor's expense.

3.2 All material containing organic matter, such as root mat and other vegetative matter, shall be considered vegetation and removed as part of the work of grubbing. Earth or soil, which in the opinion of the engineer is clean, will not be considered as clearing debris. Topsoil will be treated as clearing debris. However, if allowed by other sections of these specifications, clean topsoil may be used as a final cover on areas to be grassed. Topsoil is defined as friable clay loam surface soil. Satisfactory topsoil shall be, in the opinion of the engineer, reasonably free of subsoil, clay lumps, stones, and other objects over 2 inches in diameter, and without weeds, roots, heavy organic matter, debris and other objectionable material.

3.3 The contractor shall take the necessary measures and precautions to protect existing trees and other vegetation indicated to remain in place against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within the drip line. The contractor shall provide all temporary guards and measures necessary to protect trees and vegetation to be left standing at the contractor's expense. The contractor shall water trees and shrubs to be preserved within the project limits on an as needed basis. The contractor shall conduct his operations in a manner to prevent limb, bark, or root injuries to trees, shrubs, or other types of vegetation that are to remain growing and also to prevent damage to adjacent property. Should such injuries occur, all rough edges of scarred areas shall be made reasonably smooth in accordance with generally accepted horticultural practice. Any such plants that are damaged by any construction operations to such an extent as to destroy their value, shall be cut and disposed of by the contractor, when so directed by the engineer.

3.4 The work of clearing, demolition and grubbing shall also include the removal and satisfactory disposal of crops, weeds, and other annual growth; the removal and satisfactory disposal of fences, steps, walls, chimneys, column footings, other footings, structures, buildings, foundation slabs, basements, other foundation components, pavements and base materials, signs, junked vehicles, and other rubble and debris if identified to be demolished or removed; and the filling of holes and depressions all at the contractor's expense. Any items which the wishes to retain ownership of shall be salvaged by the contractor, free of damage, and stored on the project site at a location(s) to be designated by the owner.

3.5 As part of clearing and grubbing operations, the contractor will be required to cut off and plug, as directed by the engineer, any storm sewer, water line, sewer line or other utility to be abandoned or intercepted during the construction of the project and remove any septic tank or portion thereof to be abandoned or intercepted during the construction of the project at the contractor's expense. Approved locations for plugging pipes shall be done so with a watertight plug approved by the engineer.

3.6 Clearing, demolition & grubbing operations shall be completed sufficiently in advance of grading operations as may be necessary to prevent any of the debris from the clearing and grubbing operations from interfering with earthwork or other construction operations.

3.7 All work under this section shall be performed in a manner which will prevent soil erosion and loss of sedimentation. The contractor shall provide all erosion control work, temporary or permanent, as may be necessary to prevent erosion resulting from clearing and grubbing operations. At all locations possible, the installation of temporary or permanent erosion control measures shall be performed prior to commencing clearing, grubbing or demolitions activities.

3.7 The contractor is required to completely remove all demolition, clearing and grubbing materials including, but not limited to, all stumps and other vegetative matter and dispose of all waste generated off the owner's property at an approved site at the contractor's sole expense. The contractor shall be responsible for paying all landfill related fees and acquiring any additional permits, at the contractor's expense, that may be necessary for the successful completion of the project to the satisfaction of the engineer. The contractor is responsible for locating properly permitted landfills or disposal facilities that will accept the particular types of wastes generated by the project and transporting all waste materials to the appropriate locations.

3.8 All holes and other depressions shall be filled, and the area brought to sufficiently uniform contour to the satisfaction of the engineer. This work shall be done regardless of whether the irregularities were the result of the contractor's operations or were originally existing.

4.0 METHOD OF MEASUREMENT & BASIS OF PAYMENT

4.1 All work, materials, equipment, labor, testing, incidentals and appurtenances described in this section shall not be measured and paid for as such, but shall all be treated as incidental work. The contractor is responsible for including the price of all work covered herein in the lump sum prices stipulated for related work in the bid form.

END OF SECTION

SECTION 2200

EARTHWORK

1.0 GENERAL

1.1 Description: The Contractor shall furnish all materials, labor, equipment, supplies and incidentals necessary to complete all proposed earthwork, including but not limited to, excavation, backfill, undercut excavation, fill, backfill, compaction, provision and installation of borrow materials, embankment formation, subgrade preparation, removal and offsite disposal of all waste, demolished or excess materials, grading and land contouring to the satisfaction of the engineer, and as shown on the plans, specified herein and as specified in related sections.

1.2 The owner may, at their discretion, obtain the services of a licensed geotechnical consultant, at the owner's expense, to sample and test soil parameters to verify that soils meet project requirements and perform compaction density testing of soils, fill, backfill, subgrade and base materials. A licensed geotechnical engineer shall be any qualified agency having a NC professional soils engineer on staff, experienced in soil mechanics, testing and soils science and having the necessary staff and properly calibrated equipment to accurately test soil compaction density and the necessary related parameters. The owner may, at their discretion, select not to have or to have a representative of the geotechnical consultant on the project site periodically or full time, depending upon job conditions and progress. The owner's geotechnical consultant shall have the authority to approve or disapprove earthwork on the basis of compliance with project specific requirements and parameters. Any work that does not comply with project requirements, shall be repaired, replaced or otherwise corrected by the contractor at the contractor's expense, to the satisfaction of the engineer and owner's geotechnical engineer. All costs associated with retesting due to non-compliant work shall be paid for by the contractor until such time the geotechnical consultant is satisfied that the work has been corrected. The contractor is responsible, at their expense, for engaging the services of qualified professional geotechnical consultant(s) as necessary to monitor earthwork operations and provide quality control of operations to insure that construction is completed in accordance with the contract documents.

1.3 Classified Excavation: All excavation, with the exception of Rock Excavation and Undercut Excavation shall be "unclassified" or defined as Earth Excavation regardless of materials, obstructions, positions or conditions encountered whether naturally occurring or manmade. Earth excavation shall include the removal of and offsite disposal of rock excavation, structures, pavements and other obstructions, utilities, underground structures, together with any other type of earth and manmade material encountered necessary to complete all work. No additional or separate payment shall be made for earth excavation including any incidentals, related fees or any other costs or losses incurred by the contractor. All excavation that is not classified rock excavation or undercut excavation will be classified as earth excavation regardless of conditions, situations or materials encountered. All payment for

earth excavation shall not be measured but shall be included in the amounts bid for related work.

1.3.1 Rock Excavation: shall be defined, performed, measured and paid for in accordance with *Section 02090, Rock Excavation*.

1.3.2 Undercut Excavation with Stone Backfill: shall include removing unsuitable existing materials beyond the required limits of subgrade elevations. When excavation has reached the required subgrade elevations, the contractor shall contact the engineer, and the owner's geotechnical engineer to conduct a site visit. If the engineer, based on advice from the owner's geotechnical engineer, determines that the bearing materials at the required subgrade elevations are unsuitable, the contractor shall continue the excavation to a depth approved by the engineer, remove unsuitable material for the project site, and replace excavated material with select stone or aggregate borrow materials. The select stone borrow material for replacing the excavated undercut material shall be an approved aggregate replacement material. Approved aggregate replacement materials for "Undercut Excavation with Stone Backfill" shall include NCDOT #57 washed stone, NCDOT ABC stone, NCDOT Class A, B, 1 or 2 Rip Raps or a combination of these materials depending upon the site specific recommendations of the owner's geotechnical engineer. All approved aggregate replacement materials shall be well consolidated with suitable vibratory compaction equipment and compacted to a minimum of 100 percent density per AASHTO T 180. Undercut excavation with stone backfill shall also include the complete encapsulation of aggregate replacement materials with a heavy duty, non-woven engineering fabric such as Mirafi 140N or an approved equal. All engineering fabric seams shall be overlapped by a minimum of 2 feet. Undercut excavation shall not include excavation, disposal and replacement of materials necessary to reach the standard subgrade elevations indicated on the plans. Undercut excavation with stone backfill shall only include additional excavation beyond subgrade limits which has been approved by the engineer. Undercut excavation extending beyond the limits specified by the engineer shall not be paid for but shall be properly repaired at the contractor's expense. Undercut excavation with stone backfill shall include the removal and disposal of unsuitable materials off the owner's property, the provision, placement and compaction of approved aggregate replacement materials to replace the volume of removed materials, the provision and installation of engineering fabric to completely encapsulate the aggregate replacement materials and all other related work and incidentals to the satisfaction of the owner's geotechnical engineer and the engineer. Topsoil removal shall not be paid for regardless of locations or depths encountered. Materials that are damaged in part due to construction activities, practices or schedules, such as foundation excavations subjected to rain or water intrusion, freezing and subsequently must be removed, shall not be considered undercut excavation and shall be repaired or corrected by the contractor at the contractor's expense. The contractor shall be paid for approved undercut excavation

with stone backfill at the unit price stipulated in the contract. Undercut excavation that has not been coordinated by the contractor with the engineer and the owner's geotechnical engineer will not be paid for. See *Allowances – Section 0700 for quantities to be included in the bid.*

1.3.3 Undercut Excavation with Soil Backfill: shall include removing unsuitable existing materials beyond the required limits of subgrade elevations. When excavation has reached the required subgrade elevations, the contractor shall contact the engineer, and the owner's geotechnical engineer to conduct a site visit. If the engineer, based on advice from the owner's geotechnical engineer, determines that the bearing materials at the required subgrade elevations are unsuitable, the contractor shall continue the excavation to a depth approved by the engineer, remove unsuitable material for the project site, and replace excavated material with select borrow soil material. The select borrow soil material for replacing the excavated undercut material shall be provided by the contractor from an approved off-site source and shall be in accordance with paragraphs 2.2, 2.2.1, 2.2.2 and 3.13 of this specification section and acceptable to the owner's geotechnical engineer. All approved soil replacement materials shall be well compacted with suitable vibratory compaction equipment to a minimum of 98 percent standard Proctor maximum dry density as determined by ASTM D698. Undercut excavation with soil backfill may be placed on top of undercut excavation with stone backfill at the discretion of the Owner's geotechnical engineer. Undercut excavation shall not include excavation, disposal and replacement of materials necessary to reach the standard subgrade elevations indicated on the plans. Undercut excavation with soil backfill shall only include additional excavation beyond subgrade limits which has been approved by the engineer. Undercut excavation extending beyond the limits specified by the engineer shall not be paid for but shall be properly repaired at the contractor's expense. Undercut excavation with soil backfill shall include the removal and disposal of unsuitable materials off the owner's property, the provision, placement and compaction of approved borrow soil materials to replace the volume of removed materials and all other related work and incidentals to the satisfaction of the owner's geotechnical engineer and the engineer. Topsoil removal shall not be paid for regardless of locations or depths encountered. Materials that are damaged in part due to construction activities, practices or schedules, such as foundation excavations subjected to rain or water intrusion, freezing and subsequently must be removed, shall not be considered undercut excavation and shall be repaired or corrected by the contractor at the contractor's expense. The contractor shall be paid for approved undercut excavation with soil backfill at the unit price stipulated in the contract. Undercut excavation that has not been coordinated by the contractor with the engineer and the owner's geotechnical engineer will not be paid for. See *Allowances – Section 0700 for quantities to be included in the bid.*

1.3.4 Unauthorized excavation consists of removing materials beyond the indicated or specified limits, subgrade elevations or the dimensions required to complete the work.

Unauthorized excavation, as well as remedial work directed by the owner's geotechnical engineer, shall be performed to the satisfaction of the engineer at the contractor's expense.

1.3.5 Earthwork is not "balanced." It is the bidder's responsibility to determine the actual quantities required to successfully complete the project and include all required earth excavation and all work in the base bid amount. The owner's geotechnical engineer will be responsible for determining the suitability or unsuitability of earthwork and related materials.

1.4 All work shall be in accordance with the provisions, rules and regulations of the North Carolina Department of Environment and Natural Resources and all other local, state and national agencies having jurisdiction.

1.5 The contractor shall be solely responsible for all job site safety and security.

1.5.1 The contractor shall be solely responsible for complying with all local, state and national codes, standards, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations and otherwise maintain safe jobsite conditions.

1.5.2 The contractor shall be solely responsible for work zone traffic control and signing. The contractor shall provide and maintain adequate work zone traffic control in accordance with the latest editions of the NCDOT "Standard Specifications for Roads and Structures," the NCDOT "Roadway Standard Drawings" the AASHTO "Manual of Uniform Traffic Control Devices" and all site specific conditions imposed by the NCDOT local Division Office.

1.6 The contractor shall be the party responsible for coordinating all construction with the owner, engineer, owner's geotechnical engineer, other contractors, subcontractors, utility companies and any other parties affected by the project. Except in an emergency, the contractor shall not operate any controls on any existing utility system without prior approval of the utility owner.

1.7 The contractor will be solely responsible for making investigations and determining the existence, exact locations, sizes, and material types of all existing utilities that may be affected by project activities prior to commencing construction. All existing utilities and related facilities are not shown on the plans and the locations shown on the plans may have been estimated based on available information. Any damage incurred to existing utilities, whether shown on the plans, not shown on the plans or incorrectly shown on the plans is the responsibility of the contractor and shall be repaired to the original or better condition, to the satisfaction of the utility owner and engineer, at the sole expense of the contractor. Should the position of any pole, guy wire, pipe, conduit, conductor or other utility or structure be such that its removal and/or adjustment is necessary to complete construction, such change will be done by the owner of the obstructions at the contractor's expense.

1.8 During the progress of the work, sidewalks and crossings shall be kept open for the passage of pedestrians. Unless otherwise authorized, drives, roads and streets shall not be obstructed; and unless the engineer authorizes the complete closing of a drive, road or street, the contractor shall take such measures as may be necessary to keep it open for traffic.

1.8.1 The contractor shall construct and maintain adequate and approved temporary walkways, roads and bridges over excavations and disturbed areas as may be necessary for the purpose of accommodating pedestrians to the satisfaction of the engineer. This shall include the contractor providing, installing and maintaining temporary pavements or gravel surfaces at his expense in a condition acceptable to the engineer. When no longer needed, temporary measures shall be removed, disposed of off the owner's property and the area restored to a condition acceptable to the engineer at the contractor's expense.

1.8.2 When earthwork or excavation impacts a drive, road, street or other vehicle route, the contractor shall perform construction in a manner that maintains the passage of vehicle traffic in a manner acceptable to the engineer and owner. This includes the provision, placement and periodic grading of temporary gravel surfaces and/or pavements at the contractor's expense. The contractor shall provide all periodic maintenance stone needed and associated grading and later removal and offsite disposal of all temporary measures at the contractor's expense. The contractor shall provide all traffic control measures necessary to provide for safe traffic passage at all times.

2.0 MATERIALS

2.1 The contractor shall be responsible for insuring that all construction materials are loaded, unloaded, stockpiled, hauled, distributed, covered, protected, installed and otherwise handled in a manner that will prevent weather damage or other damage thereto their quality or usefulness and which will insure delivery and installation in a sound and acceptable condition.

2.2 Backfill, Fill and Borrow Materials: shall be excavated, loaded, hauled, unloaded, placed and compacted by the contractor as necessary for the proper completion of the project. All material shall be clean material, free of vegetation, organic matter, rocks larger than 2 inches in any dimension or other deleterious materials. The contractor shall be responsible for drying and/or wetting fill, borrow, or backfill materials if necessary to achieve proper moisture content and the specified compaction criteria. If available and suitable, materials may be used from onsite excavation or shall be imported borrow material if not available onsite. Imported borrow material shall be provided as needed by the contractor, at their sole expense, as necessary for the proper completion of the project to the satisfaction of the engineer and owner.

2.2.1 When offsite borrow material is needed, the contractor shall be responsible for obtaining a suitable borrow source and having all borrow sources being considered tested for

suitability by a qualified NC professional geotechnical engineer at the contractor's expense. If the borrow material is found to be acceptable, and is acceptable to the engineer, the contractor shall be responsible for all permitting, excavating, hauling, placing and compacting the material all at the contractor's sole expense and as approved by the engineer. Borrow material, fill and backfill materials shall be in accordance with the following:

2.2.2 Suitable Soil Materials for fill, backfill and borrow shall be in accordance with ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, organic matter and other deleterious matter. Suitable soils shall have a Plasticity Index (PI) of less than 15 and a minimum density of 95 pounds per cubic foot at the specified degree of compaction.

2.2.3 Unsuitable Materials which shall not be allowed for use as borrow, fill or backfill material shall be any material classified by ASTM D 2487 as soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, PT or any soils containing organic material greater than 2% by weight, or any soils containing rocks or stones larger than 2 inches in any dimension, or any soils containing other materials objectionable to the engineer or any soils which cannot be compacted to specified percentage of maximum density given site specific moisture conditions.

2.3 Topsoil, unsuitable materials or any material containing organic or other objectionable materials shall not be incorporated into fill or backfill. Clean topsoil, free of roots, rocks, stones and debris, may be stockpiled at approved locations and used as a 3" topdressing on areas having slopes of 25% and less to the finished grades specified in all areas to be grassed. Where insufficient topsoil is available on the project site, the contractor shall provide from an acceptable source and place topsoil to a minimum depth of 4" for all areas to be grassed and having a finished slope of 25% and less. Any topsoil, unsuitable material or excess material which is not incorporated into the work shall be considered waste material and shall be removed and properly disposed of off the owner's property by the contractor at the contractor's expense. Any borrow, fill or other material necessary as a result of topsoil or other material removal from the project site shall be obtained, permitted, hauled, placed, compacted, graded and otherwise completed to the engineer's satisfaction by the contractor at the contractor's expense. No additional payment or compensation will be made to the contractor as a result of, or related to topsoil or other unsuitable materials regardless of site conditions or depths and limits encountered.

2.4 Any and all excess, waste or unsuitable materials shall be removed, hauled and disposed of off the project site, in accordance with applicable regulations, all at the contractor's sole expense.

2.5 Crusher Screenings: where specified as a select material shall be a fine aggregate material consisting of crushed stone screenings (washed or unwashed) meeting the following gradations:

Sieve	% Passing
3/8 in.	100
#4	80 - 100
#10	65 - 95
#40	25 - 55
#200	0 - 20

2.6 Washed Stone: Unless specified otherwise, washed stone shall be a coarse aggregate material meeting the gradation requirements of NCDOT standard size No. 57 as specified in Section 1005 of the NCDOT "Standard Specifications for Roads and Structures."

2.7 Concrete: Unless specified otherwise on the plans or other sections of these specifications, all concrete and grouts shall be Portland cement concrete having a minimum compressive strength of 4,000 psi at 28 days. All concrete exposed to weather shall be air entrained. Concrete shall be NCDOT Class A in accordance with Section 1000 of the NCDOT "Standard Specifications for Roads and Structures."

3.0 EXECUTION

3.1 The contractor shall be responsible for protecting structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

3.1.1 The contractor shall protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

3.1.2 Obstructions: It shall be the contractor's sole responsibility to conduct exploratory investigations and become thoroughly acquainted with existing conditions and to locate structures and utilities within the project limits in order to avoid conflicts or damage. Where conflicts are unavoidable, the engineer shall be contacted prior to proceeding with construction and all work shall be coordinated with the owner and performed so as to cause no interference with the service rendered by the facility disturbed. All affected utilities shall be notified by the contractor prior to excavation in their vicinity.

3.1.3 The contractor shall provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 Any areas to be filled, graded, or to support pavements or structures shall be cleared and grubbed to remove all topsoil, vegetation, organic matter or other deleterious materials to the satisfaction of the owner's geotechnical engineer at the contractor's expense. All waste materials resulting from clearing and grubbing operations shall be disposed of off the owner's property at the contractor's expense.

3.3 When, in the opinion of the Owner's geotechnical engineer and the engineer, undercut excavation is required, the contractor is responsible for notifying the engineer and allowing the engineer adequate time to profile the excavation surfaces prior to and following undercutting operations for use in estimating the volumes of undercut for payment purposes. The contractor shall assist and allow the engineer adequate time to profile the temporary surfaces prior to and following the completion of a given section or area of undercut excavation. The contractor shall be responsible for implementing all necessary safety and security measures as needed to allow temporary undercut surfaces to remain exposed for measurement by the engineer. Payment for undercut excavation will be made on the basis of the engineer's estimated volumes.

3.4 The contractor shall be responsible for achieving the proper moisture content in all materials to be used for fill, borrow material or backfill. The contractor shall uniformly moisten material that is too dry and scarify or otherwise dry material that is too wet before placement and compaction to within 3 percent of optimum moisture content or as required to meet compaction requirements.

3.4.1 Fill or backfill materials shall not be placed on surfaces that are muddy, frozen, or contain frost or ice.

3.5. Proofrolling Existing Subgrades: Any areas to receive fill and any areas that will support buildings, pavements or other structures shall be proofrolled by the contractor using a four wheeled, rubber tired roller as described in Section 260-2 of the NCDOT "Standard Specifications for Roads and Structures," January 2018. The rubber tired roller shall have a minimum loaded weight of 45 tons. The proofroller should make at least four passes over each location, with the last two passes perpendicular to the first two in the presence of the owner's geotechnical engineer. All proofrolling, including but not limited to equipment, shall be provided by the contractor at the contractor's expense. Any areas which, in the opinion of the geotechnical engineer, wave, rut or deflect excessively shall be scarified, excavated, dried or wetted to the proper moisture range and re-compacted and re-proofrolled until satisfactory results are obtained at the contractor's expense. The contractor shall be responsible for coordinating all proofrolling activities with the owner's geotechnical engineer as necessary to insure that the engineer and Owner's geotechnical engineer is on-site to observe all proofrolling activities.

3.6 Existing slopes to receive fill that are steeper than 25% shall be benched prior to beginning placement of fill. Benches shall be cut having a minimum width of approximately 8

feet to 12 feet and a rise between benches no less than 1 vertical foot nor more than 5 vertical feet. Begin each bench cut at the intersection of the original ground and the vertical side of the previous cut. Place suitable fill on excavated benches in layers not exceeding 8 inches loose thickness and compact as specified herein. All benching of existing slopes shall be performed by the contractor in accordance with the recommendations of the owner's geotechnical engineer at the contractor's expense.

3.7 Fill and Embankment Construction: shall be performed using approved materials spread in successive, approximately horizontal layers of not more than 8 inches in depth, loose measurement, for the full extent of a particular area being filled. Each layer shall be compacted as specified using suitable equipment. The fill surface shall be shaped and sloped to properly drain at all times.

3.7.1 The contractor shall make the necessary provisions and allow time for the owner's geotechnical engineer to periodically test the compaction of the placed fill as construction progresses, should they select to do so. Any fill which fails to meet the specified compaction standard shall be removed, replaced with suitable material, re-compacted and re-tested until acceptable results are obtained to the satisfaction of the owner's geotechnical engineer. Any costs associated with replacing fill failing to meet the required compaction requirements shall be paid by the contractor. The contractor shall reimburse the owner for any re-testing costs due to failed compaction testing.

3.7.2 As fill and embankment construction proceeds, the contractor shall periodically proofroll the filled area using a four wheeled, rubber tired roller as described in Section 260-2 of the NCDOT "Standard Specifications for Roads and Structures," January 2018 at intervals requested by the owner's geotechnical engineer. The rubber tired roller shall have a minimum loaded weight of 45 tons. The proofroller should make at least four passes over each location, with the last two passes perpendicular to the first two in the presence of the owner's geotechnical engineer. All proofrolling, including but not limited to equipment, shall be provided by the contractor at the contractor's expense. Any areas which, in the opinion of the owner's geotechnical engineer, wave, rut or deflect excessively shall be scarified, excavated, dried or wetted to the proper moisture range and re-compacted and re-proofrolled until satisfactory results are obtained at the contractor's expense. The contractor shall be responsible for coordinating all proofrolling activities with the owner's geotechnical engineer as necessary to insure that the geotechnical engineer is on-site to observe all proofrolling activities.

3.8 Compaction: All compaction shall be performed by the contractor at the contractor's expense. Unless specifically noted otherwise elsewhere, all fill, backfill, borrow material, subgrade, and other earth materials shall be placed and compacted in individual lifts not exceeding 8 inches in thickness to at least 98% of the standard Proctor maximum dry density as determined by ASTM D 698 unless a higher degree of compaction is required in other portions of the contract documents for this project. Any areas which do not meet the

required compaction criteria shall be removed, replaced and re-compacted with suitable material until the required degree of compaction is achieved, to the satisfaction of the owner's geotechnical engineer, at the contractor's sole expense. The contractor shall reimburse the owner for any re-testing costs due to failed compaction testing. The owner is not required to provide testing for the contractor and the absence of testing in no way relieves the contractor's responsibility to meet compaction requirements at all locations throughout the project as specified.

3.9 Excavations shall be performed by the contractor to the indicated elevations and dimensions within a tolerance of plus or minus 0.10 feet. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services, other construction, and as required by site specific requirements, standards and regulations.

3.9.1 Excavations for Footings and Foundations: Do not disturb the bottom of the excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work. Do not allow the bottom of the excavation to be damaged by rain, frost or any other means.

3.10 Sheet piling and Bracing: When required to prevent damage to property, injury to persons, erosion, cave-ins, or excessive excavation limits, the contractor shall install adequate sheet piling, bracing, retaining walls, trench boxes, etc. as may be necessary and as required by OSHA and other agencies having jurisdiction and in accordance with accepted standard practice. When the situation arises, sheet piling and bracing shall be used as necessary to protect the integrity of the project site. The lower portions of sheet piling may be left in place and backfilled provided it is at least 5 feet below finished grade and does not interfere with any construction or future improvements planned for the site. All sheet piling, bracing, shoring, retaining walls, trench boxes and other support devices shall be in accordance with OSHA, and all other local, state and national regulations, requirements, guidelines and recommendations and shall be at the contractor's expense. The contractor is solely responsible for all safety and site security in any way related to construction.

3.11 The contractor shall uniformly fine grade all areas to a smooth, even surface, in accordance with the lines, grades and elevations shown on the plans. The graded surface shall be free from unwanted irregular surface changes, ridges, ruts and shall provide a smooth transition between existing adjacent grades and newly graded areas. All grades shall be within 0.1 feet of plan grades for grassed areas and within 0.03 feet of plan grades for paved areas. Regardless, all grassed areas shall be sloped for proper drainage at a minimum slope of 2 percent and all paved areas shall be sloped for proper drainage at a minimum slope of 1 percent. All grading shall be performed by the contractor at the contractor's expense.

3.11.1 All disturbed areas to be grassed shall be prepared by the contractor by fine grading to the proper grades and contours, raked smooth and cleaned of all surface rocks, organics or any other debris, and seeded and mulched as needed to establish a healthy stand of grass to

the satisfaction of the engineer and the owner. When required by the plans or necessary to establish grasses and prevent erosion, the contractor shall provide and install temporary excelsior matting anchored in accordance with the manufacturer's instruction and in accordance NCDOT Specification Section 1060-8.

3.12 Excess and Unsuitable Materials : Excess fill, waste, topsoil, unsuitable materials or other materials, whether considered suitable or unsuitable shall become the property of the contractor and shall be loaded, hauled, unloaded, placed and disposed of at locations, off the owner's property, secured and properly permitted by the contractor, in accordance with all agencies having jurisdiction, at the sole expense of the contractor. No additional compensation will be made to the contractor for any activity associated with the disposal of waste or excess materials. The resale of excess or waste materials on the project site will not be permitted.

3.13 Borrow: Should there be insufficient suitable materials from the excavations to meet the requirements for fill or backfill material, the contractor shall be responsible for: locating and obtaining a suitable borrow source off the owner's property, providing all testing necessary to locate suitable borrow and insure the selected materials suitability, all permitting, excavating, loading, hauling, unloading, placing, compacting, disposing of waste material and all other work associated with borrow material all at the contractor's sole expense. All borrow material shall meet the provisions of these specifications.

3.14 Rock Excavation: Rock excavation shall be performed in accordance with *Section 2090 "Rock Excavation."*

3.15 The contractor shall take all measures necessary to keep surface water out of the foundations, excavations and trenches by diking, ditching, or otherwise avoiding it. All the necessary provisions for proper surface drainage, to the satisfaction of the engineer, shall be made by the contractor as needed to prevent any related damage to the project site or other properties. Any damage as a result of surface water shall be satisfactorily repaired at the contractor's expense.

3.16 Dewatering: All construction shall be performed in dry excavations. All dewatering activities necessary to achieve dry conditions are to be performed by the contractor at the contractor's expense. Groundwater tables shall be maintained by the contractor at levels lower than 2 feet below foundation or structure bearing elevations, pavement subgrade elevations, or pipe invert elevations.

3.16.1 Excavations may be dewatered by using one or more of the following methods: well point system; sumps with pumps or other method(s) as approved by the engineer. Dewatering systems shall be utilized in accordance with good standard practice and must be efficient enough to lower the water level in advance of the excavation and maintain it continuously to keep the excavation bottom and sides firm and dry. Discharge from

dewatering shall be disposed of in such a manner that it will not interfere with normal drainage of the area in which the work is being performed, create a public nuisance, cause ponding or cause erosion or sedimentation concerns or problems.

3.16.2 All dewatering discharges shall be in accordance with applicable NC Stormwater General Permits and any other applicable regulations. The operations shall not cause injury to any portion of the work completed, or in progress, or to the surface of roads, or to any public or private properties. Dewatering method(s) and schedules shall be acceptable to all regulatory agencies having jurisdiction. Where private or public properties outside the construction limits will be involved, advance permission and coordination shall be obtained by the contractor.

4.0 METHOD OF MEASUREMENT & BASIS OF PAYMENT

4.1 All work, materials, equipment, labor, testing, incidentals and appurtenances described in this section, with the exception of Undercut, as defined herein, shall not be measured and paid for as such but shall all be treated as incidental work. The contractor is responsible for including the price of all work covered herein in the prices stipulated for related work in the bid form.

4.2 Undercut Excavation with Stone Backfill: shall include the work as described herein and related portions of the Contract Documents. The contractor shall be paid for undercut excavation with stone backfill in quantities approved by the engineer at the unit bid price stipulated in the contract for the actual quantities of undercut. ***See Allowances – Section 0700 for quantities to be included in the base bid.***

4.3 Undercut Excavation with Soil Backfill: shall include the work as described herein and related portions of the Contract Documents. The contractor shall be paid for undercut excavation with soil backfill in quantities approved by the engineer at the unit bid price stipulated in the contract for the actual quantities of undercut. ***See Allowances – Section 0700 for quantities to be included in the base bid.***

END OF SECTION

SECTION 2210
EXCAVATION, TRENCHING & BACKFILLING
FOR UTILITIES

1.0 GENERAL

1.1 Description: The Contractor shall furnish all materials, labor, equipment, supplies and incidentals necessary to complete the proposed utility work, including but not limited to water lines, fire sprinkler lines, sewer lines, water and sewer service lines, storm drains, storm drainage structures, culverts, casing pipes, sleeves and other utilities to the satisfaction of the engineer and as shown on the plans, specified herein and as specified in related sections.

1.2 The owner may, at their discretion, obtain the services of a licensed geotechnical consultant, at the owner's expense, to sample and test soil parameters and perform compaction density testing of soils, fill, backfill, subgrade and base materials as required by the engineer and stipulated herein. A licensed geotechnical engineer shall be any qualified agency having a NC professional soils engineer on staff, experienced in soil mechanics, testing and soils science and having the necessary staff and properly calibrated equipment to accurately test soil compaction density and the necessary related parameters. The owner's geotechnical consultant shall have the authority to approve or disapprove earthwork on the basis of compliance with project specific requirements and parameters. Any work that does not comply with project requirements, shall be repaired, replaced or otherwise corrected by the contractor at the contractor's expense, to the satisfaction of the engineer and owner's geotechnical engineer. All costs associated with retesting due to non-compliant work shall be paid for by the contractor until such time the geotechnical consultant is satisfied that the work has been corrected.

1.3 Rock Excavation shall be in accordance with Section 02090, Rock Excavation, as specified herein and as specified in related sections of the specifications. Rock Excavation shall be defined and performed in accordance with *Section 02090, Rock Excavation*.

1.4 General grading and sitework shall also be in accordance with Section 02200, Earthwork, and as specified herein and as specified in related sections of the specifications.

1.5 All work shall be in strict accordance with the provisions, rules and regulations of the North Carolina Department of Environmental Quality and all other local, state and national agencies having jurisdiction.

1.6 The contractor shall be responsible for all job site safety and security including, but not limited to, work zone traffic control and signing. The contractor shall provide and maintain adequate work zone traffic control in accordance the latest editions of the NCDOT "Standard Specifications for Roads and Structures," the NCDOT "Roadway Standard Drawings" the "Manual of Uniform Traffic Control Devices" by the Federal Highway Administration and all site specific conditions imposed by the NCDOT local Division Office.

1.7 The contractor shall be responsible for coordinating all construction with the owner and other all utility companies affected by the project. Except in an emergency, the contractor shall not operate any controls on any existing utility system without prior approval of the utility owner.

1.8 The contractor will be solely responsible for making investigations and determining the existence, exact locations, sizes, and material types of all existing utilities that may be affected by project activities prior to commencing construction. All existing utilities and related facilities are not shown on the plans and the locations shown on the plans may have been approximated. Any damage incurred to existing utilities, whether shown on the plans, not shown on the plans or incorrectly shown on the plans is the responsibility of the contractor and shall be repaired to the original or better condition, to the satisfaction of the utility owner and engineer, at the sole expense of the contractor.

1.9 Connections to existing utilities shall be made when shown on the plans, required to successfully complete the project and as directed by the engineer. The connections shall be made at times most convenient to the public and when the service will be the least endangered by the work. The connections shall be made on weekends, at night, and on holidays if required by the utility owner or engineer. Should the position of any pole, pipe, conduit, conductor or other structure be such that its removal and/or adjustment is necessary to complete construction, such change will be done by the owner of the obstructions at the contractor's expense.

1.10 Water lines shall be located at least 10 feet laterally from sanitary sewers, unless local conditions or barriers prevent a 10 foot separation, in which case the water main is laid in a separate trench, with the elevation of the bottom of the water pipe at least 18 inches above the top of the sanitary sewer pipe. When a water line crosses a sanitary sewer line, the water line shall be laid at such an elevation that the bottom of the water pipe is at least 18 inches above the top of the sanitary sewer, unless local conditions or barriers prevent an 18 inch vertical separation, in which case both the water line and the sanitary sewer line shall be constructed of Cl. 51 ductile iron pipe (DIP) with joints that are equivalent to AWWA water main standards for a distance of 10 feet on each side of the point crossing.

1.11 During the progress of the work, sidewalks and crossings shall be kept open for the passage of pedestrians. Unless otherwise authorized, drives, roads and streets shall not be obstructed; and unless the engineer authorizes the complete closing of a drive, road or street, the contractor shall take such measures as may be necessary to keep the street open for traffic.

1.11.1 The contractor shall construct and maintain adequate and approved temporary walkways, roads and bridges over excavations and disturbed areas as may be necessary for the purpose of accommodating pedestrians or vehicles to the satisfaction of the engineer. This shall include the contractor providing, installing and maintaining temporary gravel surfaces at his expense in a condition acceptable to the engineer.

1.11.2 When open cut installation is allowed across a drive, road or street and traffic is to be maintained, the installation shall be done in sections so that half the width of the roadway will be available to traffic. The Contractor shall provide all traffic control measures necessary to provide for safe traffic passage.

2.0 MATERIALS

2.1 The contractor shall be responsible for insuring that all construction materials are loaded, unloaded, stockpiled, hauled, distributed, covered, protected, installed and otherwise handled in a manner that will prevent breakage, weather damage or other damage thereto their quality or usefulness and which will insure delivery and installation in a sound and acceptable condition.

2.2 Pipe, fittings and other materials for use in constructing utilities shall be in accordance with the plans and other related sections of these specifications.

2.3 Backfill, Fill and Borrow Materials: used in utility construction shall be excavated, loaded, hauled, unloaded, placed and compacted by the contractor as necessary for the proper completion of the project. All material shall be clean material, free of vegetation, organic matter, rocks larger than 2 inches in any dimension or other deleterious materials. The contractor shall be responsible for drying and/or wetting backfill and fill materials if necessary to achieve specified compaction criteria. If available and suitable, materials may be used from onsite excavation or shall be imported borrow material if not available onsite. Imported borrow material shall be provided as needed by the contractor, at his expense, as necessary for the proper completion of the project to the satisfaction of the engineer. When borrow material is needed, the contractor shall be responsible for obtaining a suitable borrow source, having all borrow sources considered tested for suitability by a qualified soils laboratory, excavating, hauling, placing and compacting the material all at the contractor's sole expense. Backfill, fill and borrow materials shall be in accordance with the following:

2.3.1 Suitable Materials For Backfill And Fill: shall be classified as A-1, A-3 or A-2-4 in accordance with AASHTO Designation M-145 and shall be free from vegetation, organic material and rocks larger than 2 inches. Not more than 12 percent by weight of fill material shall pass the No. 200 sieve. All Backfill and Fill materials shall have a minimum, in place, compacted unit weight of 95 pounds per cubic foot.

2.3.2 Suitable Materials to be Placed in Areas having Groundwater or Wet Conditions: shall be NCDOT #57 washed stone or materials classified as A-1 or A-3 in accordance with AASHTO Designation M-145.

2.3.3 Unsuitable Material: which shall not be allowed for use as backfill or fill material are materials classified as A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 and A-8 in accordance with AASHTO Designation M 145 or any soils containing organic material, or any soils containing rocks or stones larger than 3 inches in any dimension, or any soils containing other materials

objectionable to the engineer or any soils which cannot be compacted to specified percentage of maximum density given site specific moisture conditions.

2.3.4 Topsoil, unsuitable materials or any material containing organic or other objectionable materials shall not be incorporated into fill or backfill. Clean topsoil, free of roots, rocks, stones and debris, may be stockpiled at an approved location and used as a 4" topdressing to the finished grades specified in areas to be grassed. Any topsoil, unsuitable material or excess material which is not incorporated into the work shall be considered waste material and shall be removed and properly disposed of offsite by the contractor at the contractor's sole expense. Any borrow, fill or other material necessary as a result of topsoil or other material removal from the project site shall be obtained, permitted, hauled, placed, compacted, graded and otherwise completed to the engineer's satisfaction by the contractor at the contractor's sole expense. No additional payment or compensation will be made to the contractor as a result of, or related to topsoil or other unsuitable materials regardless of site conditions or depths and limits encountered.

2.3.5 Any and all excess or unsuitable materials shall be removed, hauled and disposed of off the project site, in accordance with applicable regulations, all at the contractor's sole expense.

2.4 Crusher Screenings: where specified as a select material shall be a fine aggregate material consisting of crushed stone screenings (washed or unwashed) meeting the following gradations:

Sieve	% Passing
3/8 in.	100
#4	80 - 100
#10	65 - 95
#40	25 - 55
#200	0 - 20

2.5 Washed Stone: shall be a coarse aggregate material meeting the gradation requirements of NCDOT standard size No. 57 as specified in Section 1005 of the NCDOT "Standard Specifications for Roads and Structures."

2.6 Concrete: Unless specified otherwise on the plans or other sections of these specifications, all concrete and grouts shall be Portland cement concrete having a minimum compressive strength of 4,000 psi at 28 days. All concrete exposed to weather shall be air entrained. Concrete shall be NCDOT Class A in accordance with Section 1000 of the NCDOT "Standard Specifications for Roads and Structures."

3.0 EXECUTION

3.1 Compaction: All compaction shall be performed by the contractor at the contractor's expense. Unless specified otherwise on the plans or in other sections of these specifications, all backfill, fill, bedding and select materials shall be placed and compacted in individual lifts not

exceeding 6 inches in thickness to a minimum 100% standard proctor density under all pavers, sidewalks, roads, drives, parking areas and structures and to a minimum 98% standard proctor density at all other locations as determined by ASTM methods. Any areas which do not meet the required compaction criteria shall be removed, replaced and re-compacted with suitable material until the required degree of compaction is achieved, to the satisfaction of the engineer, at the contractor's sole expense.

3.2 Trenching: The maximum amount of open trench permitted in any one location shall be the length necessary to accommodate the length of pipe joint being installed or 20 feet whichever is less. All trenches shall be fully backfilled at the end of each day. Barricades, warning lights, signs, flagmen and other incidentals meeting NCDOT, OSHA and all other applicable requirements shall be provided and maintained.

3.2.1 The maximum width of trench, measured at the top of the pipe, shall not exceed the outside pipe diameter plus 16 inches, unless otherwise shown on the drawing details or approved by the engineer.

3.2.2 Trench grade for utilities in rock or other non-cushioning material shall be defined as six inches below the outside of the bottom of the utility, which six inches shall be backfilled with extra utility bedding material. Excavation below trench grade that is done in error shall be backfilled to trench grade with stone or other suitable granular material and compacted.

3.2.3 Utility Bedding: The bottom of the trench shall be shaped to provide a firm bedding for the utility pipe. The utility shall be firmly bedded in undisturbed firm soil which is hand-shaped to the pipe, bells and fittings to fully contact all surfaces and properly support the pipe. The bedding shall be shaped so that the pipe will be in continuous contact therewith for its full length and shall provide a minimum bottom segment support for the pipe equal to springline of the pipe or one-half of the outside diameter of the barrel. Special bedding may be required, due to rock excavation, groundwater, depth of cover, impact loadings, or any other conditions as shown on the plans or specified in related sections of specifications. Any type of special bedding required, such as washed stone, crusher screenings or other borrow materials, shall be obtained, hauled, placed and compacted by the contractor at his sole expense as necessary for the proper completion of the project to the satisfaction of the engineer.

3.2.4 Unsuitable Material Below Trench Grade: Soil unsuitable for a proper foundation which is encountered at or below trench grade, such as muck or other deleterious material, shall be removed for the full width of the trench and to the depth required to reach suitable foundation material, or otherwise stabilized to the satisfaction of the engineer using stone or other approved special bedding materials and methods. When rock or wet conditions are encountered at trench bottom grade, the contractor shall, at a minimum, extend excavation to 6 inches below the outside bottom of the utility and install NCDOT #57 washed stone bedding to a depth of 6 inches below the pipe and up to the springline of the pipe for the full trench width or to additional depths if necessary to achieve stable conditions. The contractor shall undercut, remove

and replace unsuitable materials below trench grade with washed stone or otherwise satisfactorily stabilize foundation materials regardless of depth or materials needed at the contractor's sole expense. No additional compensation will be made for additional undercut excavation, disposal of waste materials, stone bedding, other materials, labor or incidentals necessary to achieve stabilized foundation conditions for utility or storm drainage installation.

3.3 Sheeting and Bracing: In order to prevent damage to property, injury to persons, erosion, cave-ins, or excessive trench widths, adequate sheeting and bracing and trench boxes shall be provided, as required by OSHA and other agencies having jurisdiction and in accordance with accepted standard practice. When the situation arises, sheeting and bracing shall be used as necessary to protect the integrity of the road shoulder. Sheeting shall be removed when the trench has been backfilled to at least one-half its depth, or when removal would not endanger the construction of adjacent structures. When required, to eliminate excessive trench width or other damage, sheeting, bracing, or shoring shall be left in place and the top cut off at an elevation of 5.0 feet below finished grade or 1.0 foot above the top of the pipe, whichever is less, unless otherwise directed. All sheeting and bracing and trench boxes will be in accordance with OSHA, and all other local, state and national regulations, requirements, guidelines and recommendations. The contractor is solely responsible for all safety and site security in any way related to construction. All costs associated with sheeting and bracing will be at the contractor's sole expense.

3.4 Excavated Material: Suitable material to be used for backfill shall be neatly and safely deposited at the sides of the trenches where space is available. Whenever possible, excavated material near a roadway should be deposited on the right-of-way side of the trench away from the travel lanes. Where stockpiling of excavated material is required, the contractor shall be responsible for obtaining the sites to be used and shall maintain the operation as needed to prevent erosion and not present an objectionable appearance. The contractor shall be responsible for transporting the material to and from the stockpile area at his expense. All sites shall be restored to the engineer's satisfaction after the stockpiled material is removed. No excavated activities shall be conducted in a manner which impedes the drainage of road ditches, pipes, culverts or other storm drainage routes.

3.5 Excess and Unsuitable Materials : Excess fill, waste or other materials, whether considered suitable or unsuitable shall be the property of the Contractor and shall be loaded, hauled, unloaded, placed and disposed of at locations secured and properly permitted by the contractor, in accordance with all agencies having jurisdiction, at the sole expense of the contractor. No additional compensation will be made to the contractor for any activity associated with the disposal of waste or excess materials. The resale of excess or waste materials on the project site will not be permitted.

3.6 Borrow: Should there be insufficient suitable materials from the excavations to meet the requirements for fill or backfill material, the contractor shall be responsible for: locating and obtaining a suitable borrow, providing all testing necessary to locate suitable borrow and insure

the selected materials suitability, excavating, loading, hauling, unloading, placing, compacting, disposing of waste material and all other work associated with borrow material all at the contractor's sole expense. All borrow material shall meet the provisions of these specifications.

3.7 Rock Excavation: Rock excavation shall be performed in accordance with Section 02090 "Rock Excavation."

3.8 The Contractor shall take all measures necessary to keep surface water out of the foundations and trenches by diking, ditching, or otherwise avoiding it. All the necessary provisions for proper surface drainage, to the satisfaction of the engineer, shall be made by the contractor.

3.9 Dewatering: All utility installation shall be performed in dry trenches and excavations. All dewatering activities necessary to achieve dry trench conditions are to be performed by the contractor at the contractor's expense.

3.9.1 Trench excavations may be dewatered by using one or more of the following methods: well point system; sumps with pumps or other method(s) as approved by the Engineer. Dewatering systems shall be utilized in accordance with good standard practice and must be efficient enough to lower the water level in advance of the excavation and maintain it continuously to keep the trench bottom and sides firm and dry. If the material encountered at trench grade is suitable for the passage of water without destroying the sides or utility foundation of the trench, sumps may be provided at intervals at the side of the main trench excavation, with pumps used to lower the water level by taking their suction from said sumps. Discharge from dewatering shall be disposed of in such a manner that it will not interfere with normal drainage of the area in which the work is being performed, create a public nuisance, cause ponding or cause erosion or sedimentation concerns or problems.

3.9.2 All dewatering discharges shall be in accordance with applicable NC Stormwater General Permits and any other applicable regulations. The operations shall not cause injury to any portion of the work completed, or in progress, or to the surface of roads, or to any public or private properties. Dewatering method(s) and schedules shall be acceptable to all regulatory agencies having jurisdiction. Where downstream private or public properties outside the construction limits will be involved, advance permission and coordination shall be obtained by the contractor.

3.10 Obstructions: It shall be the contractor's sole responsibility to conduct exploratory investigations and thoroughly acquaint himself with existing conditions and to locate structures and utilities along the proposed utility alignment in order to avoid conflicts or damage. Where conflicts are unavoidable, the engineer shall be contacted prior to proceeding with construction and all work shall be coordinated with the facility owner and performed so as to cause no interference with the service rendered by the facility disturbed. All affected utilities shall be notified by the contractor prior to excavation in their vicinity.

3.11 Backfill material shall be clean, granular earth fill composed of sand, clay and sand, sand and fine gravel, NCDOT ABC stone, NCDOT #57 washed stone, crusher screenings, or a combination thereof approved by the engineer.

3.11.1 The initial fill from the trench bottom grade or below the trench bottom if unstable conditions are encountered, shall be as shown on the plans and specified herein. All material below the pipe and backfill material to 12 inches above the pipe shall be granular material unless washed stone, crusher screenings or other specified bedding material is shown on the plans. The initial fill shall be carefully placed and tamped around the lower half (springline) of the utility. Backfilling shall be carefully continued until the fill is 12 inches above the top of the utility in layers not exceeding 6 inches (uncompacted thickness), using the best available material from the excavation, if approved by the engineer, or special bedding material if required. The initial fill to an elevation of 12 inches above the pipe shall be free of any rocks or stones having any dimension greater than 1 inch. The initial fill material shall be lowered to within two feet above the top of pipes before it is allowed to fall, unless the material is placed with approved devices that protect the pipes from impact.

3.11.2 The remainder of the trench, above initial backfill and below the subgrade, shall be backfilled and compacted in layers not exceeding 8 inches (uncompacted thickness) per lift using approved material as specified herein.

3.12 All road shoulders and grassed areas shall be: fine graded; raked smooth and cleaned of any rocks, organics or other debris; seeded and mulched and have a healthy stand of grass established; restored to provide proper drainage; restored to the satisfaction of the engineer and all agencies having jurisdiction.

3.13 The specified compaction shall be accomplished using accepted standard methods (powered tampers, vibrators, etc.), with the exception that the first 12 inches of backfilling over the pipe shall be compacted by hand-operated tamping devices. Flooding or puddling with water to consolidate backfill will not be acceptable under any circumstances.

3.13.1 The contractor shall be responsible for coordinating all compaction density testing with the owner's geotechnical consultant. The owner's geotechnical consultant and engineer will select the locations and depths of density tests to be performed as the technician as testing operation progress. The contractor is responsible for having excavation equipment onsite and excavating to the depths and locations specified by the engineer for density tests. The contractor is responsible for re-filling and compacting test holes to the specified level of compaction. As a general rule, one density test will be made for approximately every 250 feet utility trench and at least one test location will be selected under each pavement surface that has been cut. The owner is not required to provide testing for the contractor and the absence of testing in no way relieves the contractor's responsibility to meet compaction requirements at all locations throughout the project as specified.

3.13.2 If any compaction density test results are unsatisfactory, the contractor shall re-excavate, replace (if necessary) and recompact the backfill, and retest, all at the contractor's expense until the desired compaction is obtained. Additional "side" compaction tests shall be made to each side of an unsatisfactory test, as directed by the engineer, to determine the extent of re-excavation, fill replacement and re-compaction necessary. The owner shall be reimbursed for all failed compaction tests, "side" compaction tests and all costs associated with re-testing.

4.0 METHOD OF MEASUREMENT & BASIS OF PAYMENT

4.1 All work, materials, equipment, labor, testing, incidentals and appurtenances described in this section shall not be measured and paid for as such but shall all be treated as incidental work. The contractor is responsible for including the price of all work covered herein in the lump sum prices stipulated for related work in the bid form.

END OF SECTION

This Page Intentionally Blank

SECTION 2370
EROSION & SEDIMENTATION CONTROL

1.0 GENERAL

1.1 Description: The Contractor shall furnish all materials, labor, equipment, supplies, maintenance and incidentals necessary to prevent erosion and sedimentation in accordance with all local, state and federal standards.

1.2 It shall be the contractor's sole responsibility to install and maintain erosion control measures that perform adequately to prevent erosion or loss of sediment to streams, areas outside the construction limits or adjacent properties to the satisfaction of agencies having jurisdiction and the engineer. This may require that the contractor install and maintain additional erosion control measures that are not shown on the plans. Any erosion and sediment control and related work necessary, including repair work, shall be performed by the contractor at the contractor's expense.

1.2.1 The contractor shall be solely responsible for fully complying with the NC Department of Environmental Quality (NCDEQ) Erosion Control Self Inspection including keeping detailed Self Inspection Reports in strict compliance with NCDEQ requirements. Fully and properly completed and signed, printed copies of all self inspection reports shall be provided to the owner and architect when requested by either party.

1.3 It is the contractor's responsibility to insure that construction activities comply with NC Stormwater regulations, NPDES permits, The North Carolina Sedimentation Pollution Control Act of 1973, including any subsequent amendments, updates or related requirements under the NC General Statutes or NC Administrative Code. The contractor shall be the party financially responsible for any erosion control, stormwater or NPDES violations and fines related to the construction of the project.

1.3.1 Upon receipt of notice that a land-disturbing activity is in violation of said act, the contractor shall be responsible for ensuring that all steps or actions necessary to bring the project in compliance with said act are promptly taken.

1.3.2 The contractor is responsible for defending any legal actions instituted pursuant to erosion control.

1.3.3 To the fullest extent permitted by law, the contractor shall indemnify and hold harmless the owner, the engineer and the owner's agents from and against all claims, damages, civil penalties, losses and expenses, including, but not limited to, attorneys' fees, arising out of or resulting from the performance of work or failure of performance of work, provided that any such claim, damage, civil penalty, loss of expense is attributable to a violation of the local, state or federal sedimentation pollution control regulations, laws or acts. Such obligation shall not be construed to negate, abridge or otherwise reduce an other right or obligation of indemnity which would otherwise exist as to any party or persons described in the contract documents.

1.4 Contractor shall take all the necessary measures to prevent any damage to any public or private properties, structures, utilities, facilities, etc. Should any damage occur, the contractor shall be fully responsible for making the necessary repairs or replacements, at the contractor's expense, to the satisfaction of the engineer and owner.

1.5 All work shall be in accordance the "Erosion and Sediment Control Planning & Design Manual," latest edition, by the NC Sediment Control Commission etal and the "Erosion and Sediment Control Field Manual," latest edition, by the NC Department of Environmental Quality except where modified on the plans or by the specifications.

1.6 All disturbed or graded areas shall be grassed (temporary or permanent seeding and mulching) or stabilized with a gravel surface within 7 calendar days.

2.0 MATERIALS

2.1 The contractor shall furnish all materials, equipment, labor and incidentals required to successfully accomplish all work to the satisfaction of the engineer and owner. All materials shall be new and in accordance with the following paragraphs.

2.2 SILT FENCING: shall be as shown on the plans and in accordance with the following:

2.2.1 Steel posts shall be used for silt fencing. Steel posts shall be at least 5 feet in length, approximately 1 3/8 inches wide measured parallel to the fence, and have a minimum weight of 1.33 lb/ft of length. The post shall be equipped with an anchor plate having a minimum area of 14.0 square inches, and shall have a means of retaining wire and fabric in the desired position without displacement. Fence post spacing shall not exceed 6 feet. Fence posts are inclined toward the runoff source at an angle of 15° to 20° from vertical and shall be driven into the ground for a minimum of 24" and properly secured.

2.2.2 Woven wire fence used for silt fencing shall be at least 32 inches high, and shall have a maximum mesh opening of 6 inches. The top and bottom horizontal wires shall be at least 12 gauge or heavier. All other wires shall be at the least 14 gauge or heavier.

2.2.3 Filter fabric used for silt fencing shall consist of a NCDOT Class B synthetic filter fabric, properly secured to the upslope of the wire mesh with wire ties or plastic zip ties.

2.2.4 The height of the installed silt fencing filter fabric shall be 24 inches above the ground surface. A minimum of 12" of the filter fabric shall be properly anchored and buried below grade using either the trench method or the slicing method as shown on the plans.

2.3 STONE FOR EROSION CONTROL: shall be the types and locations shown on the plans and shall be in accordance with Division 10 of the NCDOT Standard Specifications.

2.4 EROSION MATTINGS FOR DITCHES: shall be in accordance with Division 10 of the NCDOT Standard Specifications unless shown otherwise on the plans or described in these specifications.

2.5 EROSION MATTINGS FOR SLOPES: shall be long life, machine produced temporary erosion control blanket of 70% agricultural straw and 30% coconut fiber matrix sandwiched between a polypropylene nettings. Erosion mattings for slopes shall be North American Green SC150 or an approved alternate having equal or better performance characteristic.

3.0 EXECUTION

3.1 The Contractor shall construct and maintain all the necessary erosion control measures as shown on the plans and additional measures as needed to prevent erosion and sedimentation until the project is completed and all disturbed areas have been adequately stabilized by the contractor to the satisfaction of the engineer. Any additional erosion measures or maintenance necessary will be provided by the contractor at no additional cost to the owner.

3.2 All erosion mattings shall be properly installed and anchored using anchoring systems obtained from the manufacturer in accordance with the manufacturer's instructions.

3.3 The contractor shall inspect all erosion measures after every rainfall event and shall remove and dispose of silt accumulations in an approved manner and in accordance with applicable regulations. Erosion control measures shall be rebuilt or removed and replaced whenever they have deteriorated or clogged to such extent that, in the opinion of the engineer, their effectiveness has been reduced.

3.4 All temporary erosion and sediment control measures shall remain in place until the site is completely stabilized to the satisfaction of the engineer. The contractor will be responsible for the removal of all temporary erosion and sediment control measures. All temporary measures removed will remain the property of the contractor and shall be disposed of, off the project property, in an approved manner, at the contractor's expense. Upon removal of temporary erosion control devices, the contractor shall dress the area to give a pleasing appearance, and shall seed and mulch the area or otherwise provide a stabilized surface to the engineer's satisfaction.

3.5 All work shall be performed, managed and monitored by the contractor in accordance with all applicable Erosion Control Regulations, NC Stormwater General Permits, site specific Stormwater permits and all other applicable regulations. The contractor's operations shall not cause injury to any portion of the work completed, or in progress, or to the surface of roads, or to any public or private properties. Method(s) and schedules shall be acceptable to all regulatory agencies having jurisdiction. Where private or public properties outside the construction limits will be involved, coordination shall be performed by the contractor, advance permission shall be obtained by the contractor and all applicable permits shall be obtained by the contractor, at the contractor's expense.

4.0 METHOD OF MEASUREMENT & BASIS OF PAYMENT

4.1 All work, materials, equipment, labor, testing, incidentals and appurtenances described in this section shall not be measured and paid for as such but shall all be treated as incidental work. The contractor is responsible for including the price of all work covered herein in the lump sum prices stipulated for related work in the bid form.

END OF SECTION

SECTION 2390

SEEDING & MULCHING

1.0 GENERAL

1.1 Description: The Contractor shall furnish all materials, labor, equipment, supplies, maintenance and incidentals necessary to complete all temporary and permanent seeding, mulching and establishment of grasses in all disturbed areas. The work shall include, but is not limited to, preparation of seedbeds; furnishing, placing, and covering limestone, fertilizer, and seed; compacting seedbeds; furnishing, placing, and securing mulch; mowing; and other operations necessary for the permanent establishment of grasses and legumes from seed on shoulders, slopes, ditches, or any other disturbed areas. When landscape planting plans are provided, the contractor shall install permanent plants and ground cover in accordance with the specific requirements of the landscaping plan.

1.2 All disturbed or graded areas shall be grassed (temporary or permanent seeding and mulching) or otherwise stabilized by an accepted method within 7 calendar days.

1.3 Seeding and mulching shall be performed on all earth areas disturbed by construction and in any other areas within the project limits which previously had unsatisfactory vegetative cover. The contractor shall adapt his operations to variations in weather or soil conditions as necessary for the successful establishment and growth of the grasses.

1.4 The contractor shall install and maintain erosion control measures that perform adequately in accordance with Section 02370 Erosion Control and all applicable laws and regulations.

1.5 Contractor shall take all the necessary measures to prevent any damage to any public or private properties, structures, utilities, facilities, etc. Should any damage occur, the contractor shall be fully responsible for making the necessary repairs or replacements, at the contractor's expense, to the satisfaction of the engineer and owner.

2.0 MATERIALS

2.1 The contractor shall furnish all materials, equipment, labor and incidentals required to successfully accomplish all work to the satisfaction of the engineer and owner. All materials shall be new, in excellent condition and shall be stored and handled in a manner which prevents damage or degradation.

2.2 All materials, including but not limited to, lime, fertilizer, seed, mulch and tack shall be in accordance with material specifications listed in the latest edition of the NC Department of Transportation Standard Specifications for Roads and Structures. Seeding schedules shall be as shown on the plans.

3.0 EXECUTION

3.1 The contractor shall seed, mulch and establish grasses on all disturbed earth areas. The contractor is required to coordinate seeding and mulching operations with all other parties working within the project limits. The contractor will be responsible for repeating seeding and mulching operations and re-establishing grasses if necessary due to failure or neglect in coordinating with others.

3.2 Seeding and mulching shall be performed on a section by section basis immediately upon completion of utility installation, rough grading or other work for a given section. No exception will be made to this requirement unless otherwise permitted in writing by the engineer.

3.3 When construction is ceased for any period of time, the contractor shall temporarily seed, mulch and establish grasses on earth surfaces, overlapping of operations on previously established grassed areas.

3.4 The contractor shall cut and satisfactorily dispose of weeds or other unacceptable growth on the areas to be seeded. Uneven and rough areas outside of the graded section, such as crop rows, farm contours, ditches and ditch spoil banks, fence line and hedgerow soil accumulations, and other minor irregularities which cannot be obliterated by normal seedbed preparation operations, shall be shaped and smoothed as directed by the engineer to provide for more effective seeding and for ease of subsequent mowing operations.

3.4.1 The soil shall then be scarified or otherwise loosened to a depth of not less than 5 inches except as otherwise provided below or otherwise directed by the engineer. Clods shall be broken and the top 2 to 3 inches of soil shall be worked into an acceptable seedbed by the use of soil pulverizers, drags, or harrows; or by other methods approved by the engineer. All rock and debris 2 inches or larger shall be removed from all ground surfaces prior to the application of seed and fertilizer.

3.4.2 On cut slopes that are 2:1 and steeper, both the depth of preparation and the degree of smoothness of the seedbed may be reduced as permitted by the engineer, but in all cases the slope surface shall be scarified, grooved, trenched, or punctured so as to provide pockets, ridges, or trenches in which the seeding materials can lodge.

3.4.3 Seedbed preparation within 2 feet of the edge of any pavement shall be limited to a depth of 2 to 3 inches.

3.4.4 The preparation of seedbeds shall not be done when the soil is frozen, extremely wet, or when the engineer determines that it is an otherwise unfavorable working condition.

3.5 Seasonal limitation for seeding operations; the kinds of grades of fertilizers; the kinds of seed; and the rates of application of limestone, fertilizer, and seed shall be as recommended by the seed supplier and as shown on the plans.

3.5.1 Equipment to be used for the application, covering, or compaction of limestone, fertilizer, and seed shall have been approved by the engineer before being used on the project. Approval may be revoked at any time if equipment is not maintained in satisfactory working condition, or if the equipment operation damages the seed.

3.5.2 Limestone, fertilizer, and seed shall be applied within 24 hours after completion of seedbed preparation unless otherwise permitted by the Engineer, but no limestone or fertilizer shall be distributed and no seed shall be sown when the Engineer determines that weather and soil conditions are unfavorable for such operations.

3.5.3 During the application of fertilizer, adequate precautions shall be taken to prevent damage to traffic, structures, guardrails, traffic control devices, or any other public or private properties. The Contractor shall either provide adequate covering or change methods of application as required to avoid such damage. When such damage occurs the Contractor shall repair it, including any cleaning that may be necessary.

3.6 Limestone may be applied as a part of the seedbed preparation, provided it is immediately worked into the soil. If not so applied, limestone and fertilizer shall be distributed uniformly over the prepared seedbed at the specified rate of application and then harrowed, raked, or otherwise thoroughly worked or mixed into the seedbed.

3.6.1 If liquid fertilizer is used, storage containers for the liquid fertilizer shall be located on the project and shall be equipped for agitation of the liquid prior to its use. The storage containers shall be equipped with approved measuring or metering devices which will enable the engineer to record at any time the amount of liquid that has been removed from the container. Application equipment for liquid fertilizer, other than a hydraulic seeder, shall be calibrated to ensure that the required rate of fertilizer is applied uniformly.

3.7 Seed shall be distributed uniformly over the seedbed at the required rate of application, and immediately harrowed, dragged, raked, or otherwise worked so as to cover the seed with a layer of soil. If 2 kinds of seed are to be used which require different depths of covering, they shall be sown separately.

3.7.1 When a combination seed and fertilizer drill is used, fertilizer may be drilled in with the seed after limestone has been applied and worked into the soil. If 2 kinds of seed are being used which require different depth of covering, the seeding requiring the lighter covering may be sown broadcast or with a special attachment to the drill, or drilled lightly following the initial drilling operation.

3.7.2 When a hydraulic seeder is used for application of seed and fertilizer, the seed shall not remain in water containing fertilizer for more than 30 minutes prior to application unless otherwise permitted by the engineer.

3.7.3 Immediately after seed has been properly covered the seedbed shall be compacted in the manner and degree approved.

3.7.4 When adverse seeding conditions are encountered due to steepness of slope, height of slope, or soil conditions, the engineer may allow modifications to be made in the above described requirements which pertain to incorporating limestone into the seedbed; covering limestone, seed, and fertilizer; and compaction of the seedbed. Such modifications may include but not be limited to the following:

- 1) The incorporation of limestone into the seedbed may be omitted on (a) cut slopes steeper than 2:1 (b) on 2:1 cut slopes when a seedbed has been prepared during the excavation of the cut and is still in an acceptable condition; or (c) on areas of slopes where the surface of the area is too rocky to permit the incorporation of the limestone.
- 2) The rates of application of limestone, fertilizer, and seed on slopes 2:1 or steeper or on rocky surfaces may be reduced or eliminated.
- 3) Compaction after seeding may be reduced or eliminated on slopes 2:1 or steeper, on rocky surfaces, or on other areas where soil conditions would make compaction undesirable.

Regardless of the modifications allowed, the contractor shall remain fully responsible for the establishment of a healthy, long term growth of grass in all disturbed areas.

3.8. All seeded areas shall be mulched unless otherwise allowed by the engineer.

3.8.1 Grain straw may be used as mulch at any time of the year. If permission to use material other than grain straw is requested by the contractor and the use of such material is approved by the engineer, the seasonal limitations, the methods and rates of application, the type of binding material, or other conditions governing the use of such material will be established by the engineer at the time of approval.

3.8.2 Mulch shall be immediately applied after completion of seeding unless otherwise permitted by the engineer. Care shall be exercised to prevent displacement of soil or seed or other damage to the seeded area during the mulching operations.

3.8.3 Mulch shall be uniformly spread by hand or by approved mechanical spreaders or blowers which will provide an acceptable application. An acceptable application will be that which will allow some sunlight to penetrate and air to circulate but also partially shade the ground, reduce erosion, and conserve soil moisture.

3.8.4 Mulch shall be held in place by applying a sufficient amount of asphalt or other approved binding material to assure that the mulch is properly held in place. The rate and method of application of binding material shall meet the approval of the engineer. Where the binding material is not applied directly with the mulch it shall be applied immediately following the mulch application.

3.8.5 During the application of asphalt binding material, or other approved binding materials which may cause damage, adequate precautions shall be taken to prevent damage to traffic, structures, guardrails, traffic control devices, or any other public or private properties. The Contractor shall either provide adequate covering or change methods of application as required to avoid such damage. When such damage occurs the contractor shall repair it, including any cleaning that may be necessary.

3.8.6 The Contractor shall take sufficient precautions to prevent mulch from entering drainage structures through displacement by wind, water, or other causes and shall promptly remove any blockage to drainage facilities which may occur.

3.9 Areas where seeding and mulching have been performed shall be maintained in a satisfactory condition until final acceptance of the project. Maintenance shall include mowing on a regular basis to the satisfaction of the engineer and owner until such time substantial completion of the project is achieved as determined by the engineer.

3.9.1 Areas of damage or failure to establish healthy, permanent growth of grass, regardless of cause, shall be corrected by being repaired or by being completely redone, at the contractor's expense to the satisfaction of the engineer and owner. Where correction will require extensive seedbed preparation, or where earthwork repairs or complete reshaping are necessary, the contractor shall perform the necessary work at their expense.

4.0 METHOD OF MEASUREMENT & BASIS OF PAYMENT

4.1 All work, materials, equipment, labor, testing, incidentals and appurtenances described in this section shall not be measured and paid for as such but shall all be treated as incidental work. The contractor is responsible for including the price of all work covered herein in the unit bid prices stipulated for related work in the bid form.

END OF SECTION

This Page Intentionally Blank

SECTION 02630

STORM DRAINAGE & INCIDENTALS

1.0 GENERAL

1.1 Description: The contractor shall furnish all materials, labor, equipment, supplies and incidentals necessary to complete all storm drainage piping, underdrains, slotted drains, culverts, structures, inlets and appurtenances as shown on the plans and as required for the successful completion of the project, to the satisfaction of the engineer, and in conformance with applicable regulations.

1.2 All storm drainage materials and workmanship shall be in accordance the NC Department of Transportation (NCDOT) "Standard Specifications for Roads and Structures," latest edition and the "Roadway Standard Drawings," 2018 edition except as modified by the plans and specifications for this project.

1.3 The contractor will be solely responsible for making investigations and determining the existence, exact locations, sizes, and material types of all existing utilities that may be affected by project activities prior to commencing construction. All existing utilities and related facilities are not shown on the plans and the locations shown on the plans may have been estimated. Any damage incurred to existing utilities, whether shown on the plans, not shown on the plans or incorrectly shown on the plans is the responsibility of the contractor and shall be repaired to the original or better condition, to the satisfaction of the utility owner and engineer, at the sole expense of the contractor.

1.4 The contractor shall be responsible for all job site safety and security including, but not limited to, work zone traffic control and signing. The contractor shall provide and maintain adequate work zone vehicle and pedestrian traffic control in accordance the requirements of the owner, th latest editions of the NCDOT "Standard Specifications for Roads and Structures," the NCDOT "Roadway Standard Drawings" the Federal Highway Administration "Manual of Uniform Traffic Control Devices" and all site specific conditions imposed by the owner.

1.5 UNDERDRAIN: shall include the installation of a network of subsurface drains as indicated on the plans. The collection piping installed in the underdrain shall be HDPE slotted, smooth interior drainage pipe in accordance with these specifications. All upstream terminal ends of underdrain shall be provided with a solid watertight HDPE cap or plug which meets the specifications for HDPE underdrain pipe and fittings. Underdrain will be paid for at the stipulated unit price per linear foot and shall include all coordination, stake-out, pipe, tees, wyes, fittings, bends, plugs, joints, adaptors, excavation, stone, filter or engineering fabric, grading, off-site disposal of excess or waste materials, borrow materials, backfill, compaction, connections to structures, incidentals and appurtenances to the satisfaction of the engineer and the Owner's geotechnical engineer (when applicable). Underdrain will be measured by the engineer along the centerline of the underdrain collection piping through all tie ins, connections, fittings and bends. The contractor shall schedule the engineer 24 hours in advance to measure

installed underdrain prior to covering the collector piping and shall allow the engineer adequate time to obtain measurements for payment. The contractor shall be paid for installed underdrain at approved locations at the unit prices per linear foot stipulated in the contract. See Allowances – Section 0700 for quantities to be included in the lump sum bid amounts for individual repair areas.

2.0 MATERIALS

2.1 STANDARDS: All materials shall be as specified in the NCDOT "Standard Specifications for Roads and Structures," dated 2018 and the "Roadway Standard Drawings," dated 2018 except as modified on the plans and herein.

2.2 SHOP SUBMITTALS: The contractor shall submit to the engineer, catalog cuts and shop submittals for all materials, including but not limited to, pipe, filter fabric, culverts, fittings, slotted drains, structures, frames and grates and incidentals proposed for use on the project. Unless stipulated otherwise in the contract, digital pdf copies of all shop drawings shall be submitted for review. The engineer's review of shop drawings in no way relieves the contractor of his sole responsibility to insure the suitability of all materials used on the project, including but not limited to dimensions, size, capacity, brand, model, compatibility and any other product or material properties. Any unacceptable or unsuitable materials or products incorporated into the project shall be removed and replaced to the satisfaction of the engineer.

2.3 Storm Drain Pipe, Fittings & Couplings: shall be the types, materials and sizes specified on the plans. All storm drainage pipe, fittings & couplings shall be in accordance with the NCDOT Standard Specifications for Roads and Structures except as modified herein and on the plans.

2.3.1 CMP - Corrugated, Galvanized Steel Pipe: shall be in accordance with AASHTO - M36, 2-2/3" x 1/2" corrugations and shall be hot dipped galvanized and fully bituminous coated in accordance with AASHTO M190. CMP - corrugated, galvanized steel pipe 18" diameter and less shall have a minimum 16 gauge steel wall thickness exclusive of coatings and larger than 18" diameter shall have a minimum 12 gauge steel wall thickness exclusive of coatings.

Coupling bands for C.M.P. shall be a minimum of 10-1/2" in width, hot dipped galvanized, and fully asphalt coated with at least two corrugations matching reformed corrugations on all pipe ends. Coupling bands shall be fastened with minimum two 1/2" high strength galvanized diameter bolts and all couplings shall be made watertight using a neoprene gasket or o-rings. Flared end sections for CMP shall be galvanized steel, AASHTO - M36, matching the minimum gauge thickness specified for the corresponding pipe size.

Aluminized pipe may be used in lieu of fully bituminous coated galvanized pipe. Aluminized pipe must meet or exceed all the requirements for galvanized pipe except that the pipe, fittings, coupling bands and appurtenances must be fabricated from aluminum alloy steel sheet meeting

the requirements of AASHTO M274 and NCDOT requirements.

2.3.2 RCP - Reinforced Concrete Pipe: shall be in accordance with ASTM C655 and ASTM C76 Class IV, Wall B with spigot groove type joints. Joints shall be watertight with o-ring rubber gasket in accordance with ASTM C443 and ASTM C361. Precast flared end sections and endwall, where required, shall be as specified on the plans.

2.3.3 HDPE - Heavy Duty Polyethylene Pipe: shall be double walled with exterior corrugations and an integrally formed, smooth interior waterway. HDPE shall be in accordance with AASHTO Type S with annular exterior corrugations and an essentially smooth interior waterway braced circumferentially with circular ribs which are formed simultaneously with an outer wall. Pipe and fittings shall comply with the requirements for test methods for AASHTO Designations M 252 and M294 and shall be made from virgin polyethylene compounds which conform with the applicable latest edition of the AASHTO Material Specifications for cell classification as defined and described in ASTM D3350. The minimum parallel plate stiffness values, when tested in accordance with ASTM D2412 shall be as follows:

4" through 10":	340 kN/m ²
12":	345 kN/m ²
15":	290 kN/m ²
18":	275 kN/m ²

HDPE fittings shall be one piece molded and have equal strength and water tightness characteristics as specified for pipe. Unless specified otherwise, all pipe joints shall be the bell and spigot type. All HDPE joints shall be watertight with an elastomeric gasket meeting the requirements of ASTM F477. Handling and installation of HDPE shall be in accordance with AASHTO Section 30, ASTM Recommended Practice D2321 and as recommended by the manufacturer.

2.4 Structural Steel Plate Culverts & Structures: shall be a complete, integrated system supplied by a single manufacturer with a minimum of 10 years experience in the manufacture and installation of structural plate structures. Structural plate shall be of domestic manufacture in accordance with AASHTO - M167 and ASTM A761. All fasteners shall be galvanized and meet the provisions of ASTM A 449, Type 1 and ASTM A-563.

2.5 Storm Drainage Structures: shall be in accordance with the NC Department of Transportation (NCDOT) "Standard Specifications for Roads and Structures," dated 2018 and the "Roadway Standard Drawings," dated 2018 except as modified by the plans and specifications for this project. No waffle wall or knock out wall structures will be allowed.

2.5.1 Precast Concrete Storm Drainage Structures: shall be in accordance NCDOT standard requirements and shall be the NCDOT standard numbers referenced on the plans. Grates and frames for NCDOT structure drop inlets shall be of domestic manufacture and shall be the NCDOT standard numbers referenced on the plans. ADA compliant, pedestrian safe grates shall be provided in all locations where inlets are located in pedestrian traffic areas. ADA compliant,

pedestrian safe grates and frames shall have minimum grate dimensions of 24 inches x 36 inches and shall be of domestic manufacture. All precast concrete drainage structures and grates and grate frames shall be H20 vehicle load rated regardless of location and grate type.

2.6 PVC Storm Drainage Structures: shall be used only at locations stipulated on the plans. PVC structures shall be watertight manufactured units specifically designed for the type of drainage inlets and storm drainage pipe specified. PVC structures shall be manufactured in accordance with ASTM D3034 and ASTM F1336 standards. All PVC Storm drainage structures shall be 18 inches in diameter as specified on the plans and shall have a ductile iron, high flow, inlet grates except where located in pedestrian areas where they shall have ADA compliant, pedestrian safe grates unless specified otherwise on the plans. PVC structures shall be manufactured from PVC and shall include an integral PVC floor and integral PVC pipe stub spigots suitable for watertight connection to the types of storm drain pipe specified. All PVC structure construction and pipe connections spigots shall be watertight in accordance with ASTM D3212 standards. All PVC structures shall be designed to withstand H-25 wheel loading. Where required, all pedestrian grates shall be ductile iron, H-10 load rated in accordance with ASTM A-48-83 class 30B standards.

2.7 Stone: for use in bedding all pipe and couplings, and for use as underdrain aggregate and for drainage structure foundation conditioning material shall be NCDOT #57 washed stone.

2.8 Concrete: Unless specified otherwise on the plans or Section 3301 of these specifications, all poured-in-place concrete shall be Portland cement concrete having a minimum compressive strength of 4,500 psi at 28 days. All concrete exposed to weather shall be air entrained. Concrete shall be in accordance with Section 1000 of the NCDOT "Standard Specifications for Roads and Structures."

2.9 Geotextile filter fabric for Underdrains: shall be non-woven, needle punched fabrics specifically designed and manufactured for long term subsurface drainage applications. Physical properties of geotextile filter fabric shall meet the requirements listed in the following table.

Property	Test Method	Units	Elongation ≥ 50%
Grab Tensile Strength	ASTM D 4632	N (lbs)	500 (112)
Sewn Seam Strength	ASTM D 4632	N (lbs)	450 (101)
Tear Strength	ASTM D 4533	N (lbs)	180 (40)
Puncture Strength	ASTM D 4833	N (lbs)	180 (40)
Burst Strength	ASTM D 3786	kPa (psi)	950 (138)
Ultraviolet Stability	ASTM D 4355	%	50

In addition, filter fabric minimum flow rate shall be 135 gallons per minute per square foot of material.

2.10 Warning Tape: All storm drainage piping shall be marked with buried warning tape regardless of pipe material or size. All warning tape shall be a minimum of 4 mils thick by 3 inch wide and shall include a metallic core which easily allows detection with a metal detector. The

warning tape shall be blue with black letters and continuously imprinted "Caution Buried Utility Below" and shall be installed 12" above the installed piping.

3.0 EXECUTION

3.1 Pipe, structures and appurtenances shall be handled in such a manner as to ensure delivery to the site and installed in a sound, undamaged condition. All materials shall be carefully examined for defects before placing, and any found defective shall not be used. If any defects are found in the lines or in any of their fittings or appurtenances, they shall be replaced to the satisfaction of the engineer. All storm drainage pipe foundation preparation, bedding materials and backfill material, and backfilling methods and procedures shall be in accordance with the recommendations of the pipe manufacturer for site specific conditions of installation.

3.2 For underdrain installation, provide full rolls of geotextile filter fabric as furnished from the manufacturer. Protect against damage and deterioration by storing rolls in a dry place and above ground at all times until placement. Cover rolls and partial rolls until used with a dark protective covering. Geotextiles will be rejected by the engineer if found to be defective, deteriorated or damaged.

3.2.1 Underdrain trench excavation shall be to the limits described by the plans and at locations approved by the Owner's geotechnical engineer and the engineer. Excavation shall be performed in a manner so as to prevent large voids from occurring in the sides and bottom of the trench providing a smooth graded surface on both the trench floor and walls that is free of debris.

3.2.2 Underdrain geotextile filter fabric shall be placed loosely with no wrinkles or folds, and with no void spaces between the fabric and the ground surface. Successive sheets of geotextiles shall be overlapped a minimum of 12 inches with the upstream sheet overlapping the downstream sheet unless shown or specified with greater overlap on the plans.

3.2.3 After placing the drainage aggregate in the trench over the geotextile filter fabric, the fabric shall be folded over the top of the backfilled aggregate in a manner to produce a minimum overlap of fabric ends the full trench width. All seams shall be subject to the approval of the engineer.

3.2.4 Should the underdrain filter fabric be damaged during installation or drainage aggregate placement, a geotextile patch shall be placed over the damaged area extending beyond the damaged area a distance of at least 2 feet in all directions unless a larger patch is recommended by the engineer in the field.

3.2.5 Placement of underdrain aggregate should proceed immediately following placement of the geotextile. The geotextile should be covered with a minimum of 30 inches above the trench floor of loosely placed aggregate prior to compaction. A bedding layer of drainage aggregate

should be placed below the perforated collector pipe with the remainder of the aggregate placed to the minimum required construction depth. All underdrain collector pipes should have slotted perforations specifically designed for collecting groundwater. All underdrain pipe and fittings shall be min. 6" diameter HDPE smooth interior pipe and fittings in accordance with these specifications. All underdrain collector pipes shall be properly interconnected, installed at a minimum positive drainage slope of 1% and all shall be connected to a concrete site drainage structure through a core drilled hole or a factory fabricated, watertight saddle connection to an existing pipe at a location approved by the engineer. The annular space between the underdrain pipe and drainage structure shall be 1 to 2 inches larger than the pipe outside diameter and shall be fully grouted with an approved high strength, non-shrink grout.

3.2.6 The underdrain aggregate should be compacted with vibratory equipment to a minimum of 100 percent Standard AASHTO density unless recommended otherwise by the owner's geotechnical engineer.

3.3 Alignment and grade of the pipe and the location of structures shall be as shown on the plans and as required for a proper installation given site specific jobsite conditions as approved by the engineer. All storm drain piping will be laid to the required lines and grades at the required locations and as needed for a proper installation. The size and grade of storm drains shall be as shown on the plans, unless approved otherwise by the engineer. The contractor shall develop detailed record drawings of structure locations, pipe locations, alignments and grades, and the locations of all roof drains, underdrains and miscellaneous drains including the locations of all fittings, which will be provided to the engineer at project completion but prior to release of final payment.

3.4 Structural Plate shall be installed in strict accordance with the instructions of the structural plate manufacturer. The structure shall be assembled in accordance with the manufacturer's shop drawings and in accordance with the instructions and supervision of the plate arch engineer. All bolts and fasteners shall be properly tightened to the torque range specified by the manufacturer. The structural plate system shall be installed in accordance with AASHTO specifications and all necessary precautions shall be taken during backfilling operations to avoid damage to or deformation of the structure. All backfill material and placement shall meet the approval of the manufacturer.

3.5 Proper equipment, tools, and facilities will be provided and used by the contractor for safe and proper completion of the work. All pipe, structures and incidentals will be carefully lowered into the trench piece-by-piece in such a manner as to prevent damage to the structure, pipe or other material or incidental being installed. All storm drain piping shall be carefully bedded as detailed on the plans. The full length of each section of pipe shall rest solidly upon the pipe bed formed with recesses provided to properly accommodate the pipe and fittings.

3.6 All drainage boxes, inlets and all other structures, whether precast, poured in place or otherwise, shall be installed on a level pad of foundation conditioning material (NCDOT #57

stone) compacted to a minimum of 100% standard density. The pad of foundation conditioning material shall have a minimum compacted thickness of 8 inches and extend at least 12" beyond all sides of the structure unless shown otherwise on the plans.

3.7 All storm drain pipe joints, fittings and connections to structures shall be made watertight by the contractor using NCDOT approved materials unless specifically noted otherwise on the plans. Storm drainage construction shall proceed in a sequence and in a manner which does not pose threats to the owner's property nor any other affected public or private properties.

4.0 METHOD OF MEASUREMENT & BASIS OF PAYMENT

4.1 The contractor shall include, in all unit bid prices for all work related to *Storm Drainage and Incidentals*, all labor, materials, equipment, supplies, storm drain pipe, underdrain slotted pipe, structures, slotted drains, inlet grates and frames, grouts, hardware, fasteners, excavation, backfill, borrow materials, select materials, bedding materials, aggregate base course, geotextiles and filter fabrics, dewatering, washed stone, drainage course materials, select backfill, formwork, concrete, concrete pumping, anchors, temporary shoring and support systems, protection of subgrade and other materials and conditions, specialty equipment and methods to protect existing paver surfaces and other structures, compaction, temporary chain link fencing, safety and security measures, traffic control, vehicle and pedestrian way maintenance, dust control, chemicals, clean-up, erosion control, seeding & mulching, temporary gravel surfaces and temporary pedestrian boardwalks, surface repair and restoration, temporary gravel surface maintenance, disposal of waste materials, miscellaneous fees, construction and record drawing surveys by a qualified NC Professional Land Surveyor, shop drawings, record drawings, coordination with utility owners, coordination with WCU Facilities Management and others affected by the project including any delays resulting thereof and incidental costs as necessary to complete the project as shown on the plans, property restoration and any other incidental work not specifically measured to the satisfaction of the engineer and owner. All materials needed, whether shown on the plans or not shown on the plans, shall not be measured and paid for as such, but shall be included in the prices bid for related work.

4.2 Plastic Drainage Structure with Ductile Iron Grate: shall include everything described by paragraph 4.1 above, shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per EACH specified in the bid, complete, regardless of depth or grate type and shall be installed to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for Plastic Drainage Structure with Ductile Iron Grate* quantities to be included in the lump sum bid amounts for the various repair areas.

4.3 NCDOT Standard 840.46 Concrete Drainage Structure with Cast Iron Grate: shall include everything described by paragraph 4.1 above, shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per EACH specified in the bid, complete, regardless of depth or grate type and shall be installed to the

satisfaction of the owner and engineer. See also *Allowances – Section 0700 for NCDOT Standard 840.46 Concrete Drainage Structure with Cast Iron Grate* quantities to be included in the lump sum bid amounts for the various repair areas.

4.4 12" HDPE Storm Drain Pipe: shall include everything described by paragraph 4.1 above, shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per LINEAR FOOT specified in the bid, complete, regardless of depth of bury or bedding requirements and shall be installed to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for 12" HDPE Storm Drain Pipe* quantities to be included in the lump sum bid amounts for the various repair areas.

4.5 8" HDPE Storm Drain Pipe: shall include everything described by paragraph 4.1 above, shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per LINEAR FOOT specified in the bid, complete, regardless of depth of bury or bedding requirements and shall be installed to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for 8" HDPE Storm Drain Pipe* quantities to be included in the lump sum bid amounts for the various repair areas.

4.6 Tie Into Existing Storm Drain Pipe: shall include everything described by paragraph 4.1 above, shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per EACH specified in the bid, complete, and shall include core drilling the existing pipe being connected to with a core drill matching the size of the pipe being connected and a factory fabricated watertight saddle tee or factory fabricated insertion tee with watertight connection regardless of depth or the type of pipe being connected to and shall be installed to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for Tie Into Existing Storm Drain Pipe* quantities to be included in the lump sum bid amounts for the various repair areas.

4.7 Tie Into Existing Storm Drain Structure: shall include everything described by paragraph 4.1 above, shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per EACH specified in the bid, complete, and shall include neatly core drilling the existing drainage structure being connected to with a core drill of the correct diameter to provide a 2" wide annular space around the entire outside diameter of the pipe being connected and completely grouting the annular space with high strength, non-shrink grout regardless of connection depth or the size and type of pipe being connected and shall be installed to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for Tie Into Existing Storm Drain Structure* quantities to be included in the lump sum bid amounts for the various repair areas.

4.8 6" Underdrain: shall include everything described by paragraphs 1.5 and 4.1 and shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per LINEAR FOOT specified in the bid, complete, regardless of depth of bury or bedding requirements and shall be installed to the satisfaction of the owner and engineer. See

also *Allowances – Section 0700 for 6" Underdrain* quantities to be included in the lump sum bid amounts for the various repair areas.

4.9 4" Underdrain: shall include everything described by paragraphs 1.5 and 4.1 and shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per LINEAR FOOT specified in the bid, complete, regardless of depth of bury or bedding requirements and shall be installed to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for 4" Underdrain* quantities to be included in the lump sum bid amounts for the various repair areas.

4.10 Slotted Edge Drain: shall include everything described by paragraph 4.1 above and shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per LINEAR FOOT specified in the bid, complete, including the factory fabricated slot drain with progressive height inlet slot, all couplings, drain slot fillers, concrete and concrete formwork, expansion and contraction provisions and shall be installed to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for Slotted Edge Drain* quantities to be included in the lump sum bid amounts for the various repair areas.

4.11 Slotted Edge Drain Clean-outs: shall include everything described by paragraph 4.1 above and shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per EACH specified in the bid, complete, including the factory fabricated slot drain clean-out with all necessary fittings and appurtenances and a flush with finish grade 8" diameter ductile iron handhole frame with scoriated, slip resistant ductile iron lid and shall be installed to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for Slotted Edge Drain Clean-out* quantities to be included in the lump sum bid amounts for the various repair areas.

4.12 Drainage Cuts in Existing Concrete Curb: shall include everything described by paragraph 4.1 above and shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per EACH specified in the bid, complete, including removing and resetting pavers at each location of cut as detailed on the plans and shall be installed to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for Drainage Cuts in Existing Concrete Curb* quantities to be included in the lump sum bid amounts for the various repair areas.

4.13 4 FT ID Precast Concrete Conflict Manholes: shall include everything described in paragraph 4.1 above; shall be in accordance with the requirements specified herein and other portions of the contract documents and shall be paid for at the unit price per EACH specified in the bid, complete. 4 FT ID Precast Concrete Conflict Manholes shall be precast structures with a 4 ft inside diameter and; shall be in accordance with NCDOT Standard 840.52 with NCDOT Standard 840.54 ring and cover. Ring shall be bolted to top of structure with a minimum of 4 each -1/2" diameter wedge anchors with a minimum embedment of 3.5" into the concrete. All manhole covers shall be flush with finished grade and shall be installed on the slope of the

finished grade. Use a maximum of 2 each 4" tall reinforced precast concrete grade rings mortared in place to set cover at proper elevation and slope. All manhole joints, inside and out, and annular spaces around connection pipes, and inside and outside of manhole grade rings and manhole ring shall be neatly mortared with high strength non-shrink grout. The unit price per each additional precast conflict manhole shall include the 4 ft id precast concrete manhole, all watertight pipe connections and modifications, additional new sections of proper pipe materials in proper sizes, pipe connections, pipe couplings and pipe connections to manhole, all excavation, backfill, select backfill and disposal of excess or waste materials, 6" NCDOT washed stone bedding under manhole, all joint sealants, grouting and mortaring, grade rings, manhole boots, manhole steps, neatly formed inverts, manhole ring and cover, fasteners and any other work deemed necessary by the engineer. The unit price per each precast concrete conflict manhole shall be for manholes up to 6 ft deep and shall be provided with a eccentric cone top or flat slab top as deemed appropriate by the engineer for a particular location of installation.

END OF SECTION

SECTION 2720

AGGREGATE BASE & GRAVEL SURFACES

1.0 GENERAL

1.1 Description: The Contractor shall furnish all materials, labor, equipment, supplies, testing, maintenance and incidentals necessary to construct either aggregate base course suitable for placement of pavement or gravel surfaces at locations shown on the plans and as required for the successful completion of the project. Aggregate materials shall be hauled, placed, compacted, and shaped to conform to the lines, grades, depths, and typical sections required.

1.2 All materials, methods and workmanship shall be in accordance with the latest editions of the NC Department of Transportation (NCDOT), "Standard Specifications for Roads and Structures" and the "Roadway Standard Drawings" except as modified in these specifications or on the plans.

1.3 Contractor shall take all the necessary measures to prevent any damage to any public or private properties, structures, utilities, facilities, etc. Should any damage occur, the contractor shall be fully responsible for making the necessary repairs or replacements, at the contractor's expense, to the satisfaction of the engineer and owner.

2.0 MATERIALS

2.1 The contractor shall furnish all materials, equipment, labor and incidentals required to successfully accomplish all work to the satisfaction of the engineer and owner. All materials shall be clean and in accordance with the NCDOT standards referenced in paragraph 1.2.

2.2 Aggregate Base Course for as a paving base or as a final surface shall be in accordance Articles 1010-1, 1010-2 and 1010-3 of the NCDOT Standard Specifications for Roads and Structures. Unless specified elsewhere, aggregate shall be Type B in accordance with NCDOT requirements.

3.0 EXECUTION

3.1 The Contractor shall construct aggregate base and gravel surfaces at the required locations and thicknesses indicated on the plans to the satisfaction of the engineer and owner. Improper construction or placement of aggregate base or gravel materials shall be corrected, at the contractor's expense, until satisfactory conditions are achieved. Public and private properties shall be protected from any damage or detriment as a result of aggregate base or gravel surface construction.

3.2 Subgrade for aggregate base course or gravel surfaces shall be prepared, stabilized and made suitable for placement of material in accordance with the requirements of Section 500 of the NCDOT Standard Specifications of Roads and Structures except as modified herein or indicated on the plans.

3.3 The aggregate material shall be placed on the subgrade with a mechanical spreader capable of placing the material to a uniform loose depth and without segregation except that for areas inaccessible to a mechanical spreader, the aggregate material may be placed by other methods approved by the engineer.

3.4 Where the required compacted thickness of base is 8 inches or less, the base material may be spread and compacted in one layer. Where the required compacted thickness is more than 8 inches, the base material shall be spread and compacted in 2 or more approximately equal layers.

3.5 The minimum compacted thickness of any aggregate base course for pavement placement or aggregate base for use as a final gravel surface shall be 6 inches at all locations unless specifically noted otherwise on the plans.

3.6 Each layer of aggregate material shall have been compacted, tested and approved prior to placing succeeding layers of base material or pavement.

3.7 No aggregate material shall be placed on frozen subgrade or base.

3.8 Aggregate base course which is in place on November 15 shall have been covered with a subsequent layer of pavement structure or with a sand seal. Base course which has been placed between November 16 and March 15 inclusive shall be covered within 7 calendar days with a subsequent layer of pavement structure or with a sand seal. Sand seal shall be applied in accordance with NCDOT standard requirements. The application of the sand seal will in no way relieve the contractor of the responsibility to maintain or repair the damaged base or subgrade, no matter what the cause of damage, at no cost to the owner.

3.9 No traffic shall be allowed on aggregate base course which has been prepared for installation of pavement other than necessary local traffic and that developing from the operation of essential construction equipment. Any defects that develop in the completed base, regardless of cause, shall be repaired at the contractor's expense to a suitable condition.

3.10 The contractor shall utilize methods of handling, hauling, and placing aggregate materials which will minimize segregation and contamination. If segregation occurs, the contractor shall correct or replace the material to the engineer's satisfaction, at the contractor's expense. Aggregate materials which are contaminated with foreign materials shall be removed and replaced by the contractor at no additional cost to the owner. The above requirements

will be applicable regardless of the type of aggregate material placed and whether being utilized as a pavement base course or final gravel surface.

3.11 All aggregate materials shall be compacted using steel wheel tandem vibratory rollers which have been specifically designed for the compaction of aggregate materials. The number, weight and type of rollers shall be sufficient to compact the mixture to the required density. Unless specifically shown otherwise on the plans, all aggregate materials used for pavement base course or gravel surfaces shall be compacted to a minimum 100% density based on AASHTO T180 as modified by NCDOT.

3.12 Any waste or excess materials shall be properly disposed of offsite at the contractor's expense.

3.13 The owner may employ a qualified testing agency, at their discretion, to conduct density testing of the compacted aggregate materials to verify that the specified density has been achieved. The density tests will be performed at locations randomly selected by the engineer. Areas of aggregate material which fail to meet the specified compaction requirements shall be scarified, repaired and/or replaced as needed to achieve the required compaction at the contractor's expense. Upon completion of corrective measures, density testing will be re-performed to confirm that the specified density has been achieved. All costs associated with re-testing as a result of inadequate densities will be paid for by the contractor.

4.0 METHOD OF MEASUREMENT & BASIS OF PAYMENT

4.1 All work, materials, equipment, labor, testing, incidentals and appurtenances described in this section shall not be measured and paid for as such but shall all be treated as incidental work. The contractor is responsible for including the price of all work covered herein in the bid prices stipulated for related work in the bid form.

END OF SECTION

This Page Intentionally Blank

SECTION 2740

ASPHALT PAVEMENTS

1.0 GENERAL

1.1 Description: The Contractor shall furnish all materials, labor, equipment, supplies, testing, maintenance and incidentals necessary to construct and/or repair asphalt plant mixed bases and surface courses. Placement of asphalt pavements shall be constructed in one or more courses on a properly prepared subgrade and aggregate base as required to properly complete construction to the satisfaction of the engineer.

1.2 All materials, methods and workmanship shall be in accordance with the latest editions of the NC Department of Transportation (NCDOT), "Standard Specifications for Roads and Structures" and the "Roadway Standard Drawings" except as modified in these specifications or on the plans.

1.3 Contractor shall take all the necessary measures to prevent any damage to any public or private properties, structures, utilities, facilities, etc. Should any damage occur, the contractor shall be fully responsible for making the necessary repairs or replacements, at the contractor's expense, to the satisfaction of the engineer and owner.

2.0 MATERIALS

2.1 The contractor shall furnish all materials, equipment, labor and incidentals required to successfully accomplish all work to the satisfaction of the engineer and owner. All materials shall be new and in accordance with the NCDOT standards referenced in paragraph 1.2.

2.2 Prime Coat for use in treating non-asphalt bases beneath asphalt pavements shall be a product selected from the NCDOT's most current list of approved products for prime coat applications.

2.3 Tack Coat for application beneath each layer of asphalt base or surface and at the contact surface of structures will be placed on all surfaces except where a prime coat has been applied. Tack coat material shall be asphalt in accordance with NCDOT Grade RS-1H, Grade CRS-1H, Grade CRS-1, Grade HFMS-1 or Grade CRS-2. Tack coat materials shall not be diluted or mixed with water, solvents, or other materials prior to use.

2.4 Asphalt Cement: shall be in accordance Section 620 of the NCDOT Standard Specifications.

2.5 Non-Strip Additive: shall be in accordance Section 620 of the NCDOT Standard Specifications.

2.6 Coarse Aggregate, fine aggregate, mineral filler, stone screenings and sand shall be in accordance with Division 10 of the NCDOT Standard Specifications.

2.7 Asphalt Base and Surface Courses shall be plant mix composed of a mixture of coarse and fine aggregate, asphalt cement, and mineral filler and other additives when required. The several aggregate fractions shall be sized, uniformly graded, and combined in such proportions that the resulting mixture meets the grading and physical requirements of the NCDOT master mix formula specified for each particular use. Materials which will not produce a mixture within the full allowable tolerances required by NCDOT specifications will be rejected.

2.7.1 The contractor shall obtain materials from an asphalt plant having a current NCDOT master mix approval for the job mix specified. All mix formulas must have been pre-approved for use by NCDOT, prior to beginning work. The asphalt plant shall have in place a quality control program which is in accordance with Section 609 of the NCDOT Standard Specifications for Roads And Structures. A quality control program is defined as all activities, including mix design, process control inspection, sampling and testing, and necessary adjustments in the process that are related to production of a pavement which meets NCDOT standards and requirements.

2.8 Pavement Marking Materials shall be approved by the NC Department of Transportation and shall be on the most current NC Department of Transportation's "Approved Products List."

3.0 EXECUTION

3.1 The Contractor shall construct asphalt pavements at the required locations of the types and thicknesses indicated on the plans to the satisfaction of the engineer and owner. Improper pavements will be removed, properly disposed of off-site and replaced, at the contractor's expense, until satisfactory results are obtained. Bridge floors, curbs, structures, handrails and all other public and private properties shall be covered as needed to prevent spraying, tracking, splattering or other damage from occurring due to paving operations.

3.2 When requested by the engineer, a prime coat shall be applied to the surface of all non-asphalt base courses. Prime coat will be paid for at the unit price stipulated in the bid form. The surface to be treated must be sufficiently dry and the atmospheric temperature in the shade away from artificial heat is 40°F. or above for plant mix, and 50°F. or above for asphalt surface treatment. Prime coat shall not be applied on a frozen surface or when the weather is foggy or rainy.

3.2.1 The base shall be cleaned of objectionable dust, dirt, clay, and any other deleterious matter prior to placing the prime coat. When directed by the Engineer, the Contractor shall dampen the surface of the base prior to the application of the prime coat.

3.2.2 Prime coat shall be applied by means of a pressure distributor in accordance with NCDOT requirements. Prime coat shall be uniformly applied at a rate from 0.20 to 0.50 gallons per square yard.

3.2.3 The prime coat shall be applied to the full width of the base including the side slopes. After the prime coat has penetrated sufficiently, the contractor shall roll the primed surface until all loose base material is thoroughly bonded. The prime coat shall be allowed to thoroughly penetrate the base. When necessary, the contractor shall apply blotting sand in accordance with NCDOT standards.

3.2.4 The prime coat shall be maintained in an acceptable condition until such time as the pavement is placed. All maintenance and replacement of damaged prime coat shall be provided at the contractor's expense.

3.3 Tack coat shall be applied only when the surface to be treated is sufficiently dry and when the atmospheric temperature is 35°F. or above in the shade away from artificial heat. Tack coat shall not be applied when the weather is foggy or rainy.

3.3.1 The existing asphalt or concrete surface to which tack coat is to be applied shall be cleaned of all dust and foreign material prior to placing the tack coat. The Contractor shall remove grass, dirt, and other materials from the edge of the existing pavement prior to the placement of tack coat.

3.3.2 The Contractor shall provide equipment for heating and applying the asphalt material in accordance with NCDOT requirements.

3.3.3 Tack coat shall be uniformly applied at a rate from 0.02 to 0.05 gallons per square yard.

3.3.4 No more tack coat material shall be applied than can be covered with base, binder, or surface course material the same day. No base or surface mixture shall be deposited thereon until the tack coat has sufficiently cured.

3.3.5 Contact surfaces of headers, curbs, gutters, manholes, vertical faces of old pavements, and all exposed transverse and longitudinal edges of each course shall be painted or sprayed with tack coat before mixture is placed adjacent to such surfaces.

3.3.6 After the tack coat has been applied it shall be protected until it has cured for a sufficient length of time to prevent it from being picked up by traffic.

3.4 Asphalt Surface Treatment (AST) shall be the types specified on the plans and shall be in accordance with all NCDOT specifications and requirements.

3.5 When required by the plans or when, in the opinion of the engineer, required for proper placement of pavements, the contractor shall mill existing asphalt pavements at the proper locations to the proper depths, widths, and typical sections necessary.

3.5.1 Milling also includes removing, transporting, and disposing of the milled material; and cleaning the milled pavement surface at the contractor's expense. The milled material shall become the property of the contractor and shall be disposed of offsite at the contractor's expense.

3.5.2 Milling equipment shall include a self propelled unit capable of removing the existing asphalt pavement to the depths, widths, and typical sections shown in the plans and in accordance with NCDOT Standard Specifications. Removal of the existing pavements shall be to the depth required by the plans or for proper completion of the work to the engineer's satisfaction. Additional equipment necessary to satisfactorily remove the pavement in the area of manholes, water valves, curb and gutter, and other obstructions shall be provided. The milling equipment shall be equipped with a means of effectively limiting the amount of dust escaping from the removal operation in accordance with all applicable regulations.

3.5.3 The existing pavements shall be milled in a manner which will restore the pavement surface to a uniform longitudinal profile and cross section at the locations and as required for proper completion of the project.

3.5.4 The milling equipment shall be operated in such a manner as to prevent damage to the underlying pavement structure, utilities, drainage facilities, curb and gutter, paved surfaces outside the milled area, and any other appurtenances. The milled pavement surface shall be reasonably smooth and free of excessive scarification marks, gouges, ridges, continuous grooves, or other damage as determined by the engineer. Any leveling or patching required as a result of milling shall be repaired with hot asphalt plant mix to the engineer's satisfaction. The contractor shall coordinate the adjustment of manholes, meter boxes, valve boxes and other structures with the milling operation. The engineer may require remilling of any area exhibiting defects such as laminations or defects.

3.5.5 The milled pavement surface shall be thoroughly cleaned of all loose aggregate particles, dust, and other objectionable material by the use of power brooms, power blowers, power vacuums, or other means.

3.6 Asphalt materials shall be transported from the mixing plant to the point of use in vehicles which have tight, clean, smooth metal beds that have been sprayed with an approved release agent, or other approved material, to prevent the mixture from adhering to the beds. Excess release agent shall be removed prior to loading. Each load of mixture shall be fully covered with a canvas or other suitable material. All covers shall be so constructed and secured as to prevent the entrance of moisture and the rapid loss of temperature.

3.6.1 Asphalt mixture shall be spread and finished to the required grades, cross sections, thicknesses, and widths and to uniform density and texture by a self-contained, power propelled paver. The paver shall be equipped and operated with a fully activated screed plate which is designed to be preheated for the full length whenever necessary. The screed shall be of adequate length to spread and finish the full uniform width travel lane being placed. The use of strike off devices, either mechanically or manually operated, will not be permitted in spreading and finishing the mixture placed in the uniform width travel lane or roadways. The paver shall be equipped with a receiving hopper and an automatically controlled distribution system which is capable of uniformly maintaining a proper head of material in front of the full length of the screed including screed extensions. The screed unit shall be equipped with a sliding shoe attachment which will form a slope on the edge of the mat to prevent edge raveling when the mixture is compacted. All paving equipment shall be in accordance with the requirements of the NCDOT Standard Specifications.

3.6.2 Coordination of the paving operation and the loading operation shall be adjusted to maintain an adequate amount of asphalt mixture in the paver hopper. The paver hopper shall not be allowed to become empty between loads. Should unevenness of texture, tearing, segregation, or shoving occur during the paving operation due to unsatisfactory methods or equipment, the contractor shall immediately take such action as may be necessary to correct such unsatisfactory work. Throwing back excessive material will not be permitted.

3.6.3 Pavers shall be equipped with a screed control system which will automatically control the longitudinal profile and cross slope of the pavement by the use of either a mobile string line or a fixed string line. The grade sensor shall be positioned at the approximate midpoint of the mobile reference system. The contractor shall furnish and erect the necessary guide lines for the proper completion of paving operations.

3.6.4 When placing adjacent lanes of the final surface course, the paver shall be equipped with a joint matching device which will automatically provide control of the depth of the mixture being placed so that, when compacted, it will match the depth of the existing lane.

3.6.5 The use of pavers for spreading and finishing may be omitted where patching or irregularities and obstacles make their use impractical. In these cases, the contractor shall properly spread, rake, and lute the mixture by hand methods.

3.6.6 Paving operations shall be as continuous as possible. Parking spaces, pull-outs, and other irregular areas shall be paved after the main line roadway has been paved.

3.7 Immediately after the asphalt mixture has been spread, struck off, and surface and edge irregularities adjusted, it shall be thoroughly and uniformly compacted. The degree of compaction required shall be in accordance with the 2006 NCDOT Standard Specifications for Superpave mixes. All Superpave mix types shall be compacted to a minimum 92% of the maximum specific gravity in accordance with AASHTO T 209 and as required by Section 610 of the 2006 NCDOT Standard Specifications except as modified herein.

3.7.1 All surface courses shall be compacted using steel wheel tandem vibratory rollers which have been specifically designed for the compaction of asphalt pavements, except that operation in the vibratory mode will be permitted only during the breakdown rolling phase on all final wearing surfaces 1 inch or greater in thickness. Vibratory rollers shall have variable frequency and amplitude capability. The rollers shall be equipped with controls which automatically disengage the vibration mechanism before the roller stops when being used in the vibratory mode. Rollers used to compact the mixture shall be in good condition, capable of reversing without backlash. Steel wheel rollers shall be equipped with wetting devices to prevent the mixture from sticking to the roller wheels.

3.7.2 The number and weight of rollers shall be sufficient to compact the mixture to the required density while it is still in a workable condition. Pneumatic-tired rollers with 2 tandem axles and smooth tread tires will be permitted for use in intermediate rolling.

3.7.3 Compaction rolling (including both breakdown and intermediate rolling) shall be completed prior to the mixture cooling below a temperature of 185°F. Finish rolling shall be performed to remove roller marks resulting from the compaction rolling operations.

3.7.4 The use of rolling equipment which results in excessive crushing of the aggregate or excessive displacement of the mixture will not be permitted. In areas inaccessible to equipment, the mixture shall be thoroughly compacted by the use of hand tampers or hand operated mechanical tampers.

3.8 The owner shall employ a qualified testing agency to conduct density testing of the compacted asphalt to verify that the specified density has been achieved. The density tests will be performed at locations randomly selected by the engineer. The engineer may select to utilize either nuclear density testing methods or cored sample testing methods.

3.8.1 When cored samples of the compacted pavement are required by either method, they shall be taken from the full depth of the course at locations designated by the engineer. When cored samples have been taken, the contractor shall be responsible for repairing all cored test holes. Hole repair shall include cleaning the inside surfaces of the sample hole, dried and lightly coated with tack coat and new asphalt material shall be immediately placed and compacted by the contractor to conform with the surrounding area. A circular tamp or other device shall be used to achieve compaction.

3.8.2 Unless specified otherwise on the plans, all asphalt pavements, including but not limited to, surface, base and binder courses shall be compacted to a minimum density of 92% (percent) of maximum specific gravity as defined by AASHTO T 209. Areas of pavement which fail to meet the specified compaction requirements shall be removed and replaced to the satisfaction of the engineer and owner at the contractor's expense. Upon completion of corrective measures, density testing will be re-performed to confirm that the specified density

has been achieved. All costs associated with re-testing as a result of inadequate pavement densities will be paid for by the contractor.

3.9 The contractor shall furnish, install, remove, repair and replace pavement markings as shown on the plans, as necessary to restore preconstruction conditions or better and as required by the engineer. All pavement markings shall be as shown on the plans, in accordance with NCDOT Standard Specifications for Roads and Structures, in accordance with the NCDOT Roadway Standard Drawings and in accordance with the AASHTO Manual of Uniform Traffic Control Devices. This requirement applies to asphalt and concrete pavements.

3.9.1 All pavement markings shall be applied using specially designed pavement marking application equipment in accordance with NCDOT requirements. The application equipment shall be maneuverable and manageable to the extent necessary to form straight lines and true arcs. All pavement marking application equipment shall be kept in proper working condition.

3.9.2 Glass beads shall be applied when required to the surface of pavement markings and shall be applied by an automatic dispenser attached to the marking equipment as required to provide the proper amount of retro-reflectivity and uniformly spread and properly embed the beads over the entire surface of the pavement marking.

3.9.3 Pavement markings shall not be placed when the pavement shows any visible signs of containing moisture, or it is anticipated that damage-causing moisture may occur during the installation and drying periods. Paint shall be applied only when the ambient air temperature and pavement surface temperature is a minimum of 40°F and rising and a maximum of 160°F. Thermoplastic pavement markings shall not be applied on existing pavement surfaces or new concrete pavements unless the ambient air temperature and the temperature of the pavement is 60°F and rising. Thermoplastic pavement markings shall not be applied on asphalt surfaces less than 12 hours old unless the ambient air temperature and the temperature of the pavement is 50°F and rising. Epoxy pavement marking shall not be applied unless the ambient air temperature and the pavement surface temperature is a minimum of 35°F and rising. Cold applied plastic pavement marking shall be installed per manufacturer's specifications.

3.9.4 The Contractor shall premark each installation of pavement marking materials prior to application, except when existing markings are visible. The premarking shall be a guide in placing the pavement markings.

3.9.5 To insure maximum possible adhesion, all pavements upon which new pavement markings are to be placed shall be properly prepared to accept the new pavement markings. The surface preparation shall include but not be limited to, cleaning, sealing and curing compound removal necessary for the markings to adhere to the pavement. All pavements shall be cleaned free of grease, oil, mud, dust, dirt, grass, loose gravel and other deleterious material, prior to the application of the pavement markings. The pavement surface area to be prepared

including removal of curing compound shall be a minimum of 2 inches wider than the pavement markings to be placed. All new Portland Cement Concrete pavements which contain curing compound shall have all curing compound and surface laitance removed where long-life pavement markings will be placed. Curing compound removal shall be accomplished by high pressure water, sand or shot blasting methods.

3.9.6 When recommended by the manufacturer, a primer-sealer shall be applied to the area where pavement markings are to be placed. The primer-sealer shall be of the type recommended by the manufacturer of the pavement marking material.

3.9.7 The installed pavement marking material shall have a uniform thickness and smooth surfaced cross-section throughout its entire length. All pavement marking widths and lengths shall be not less than the dimensions specified in the plans and shall not exceed the dimension by more than 1/2 inch. Pavement marking lines shall be straight or of uniform curvature and shall conform with the tangents, curves, and transitions as indicated on the plans and required for site specific requirements. The finished lines shall have well defined edges and be free of horizontal fluctuations. The lateral deviation of the finished lines shall not exceed 1/2 inch from the proposed location alignment at any point. Any greater deviations shall be sufficient cause for requiring the material to be removed and replaced at no additional cost to the owner.

3.9.8 The contractor shall protect the pavement markings until they are track free. Any markings tracked by a vehicle or otherwise damaged shall be removed by methods acceptable to the engineer and replaced at the contractor's expense. The contractor shall be responsible for removing all pavement marking materials spilled on the road surface by a method acceptable to the engineer.

3.9.9 All pavement marking materials shall be applied to the minimum thicknesses for each particular type required by Division 12 of the NCDOT Standard Specifications.

3.9.10 Pavement markings installed by the contractor which prematurely deteriorate, fail to adhere to the pavement, do not meet dimensional tolerances, lack reflectorization, or are otherwise unsatisfactory, during the life of the project shall be replaced by the contractor at the contractor's expense.

4.0 METHOD OF MEASUREMENT & BASIS OF PAYMENT

4.1 Asphalt Pavement Repair shall be measured along the centerline of the storm drain pipe or underdrain installed and shall be paid for at the price per linear foot specified in the Bid form. Payment for pavement repair will be made at the price per LINEAR FOOT specified in the bid regardless of the width of pavement repair required. It shall be the contractor's responsibility to minimize the width of pavement repair to the extent possible while meeting the requirements shown on the typical repair sections. No additional compensation will be made for Pavement Repair regardless of the types and thicknesses of pavements to be replaced. When the existing pavements are thicker than the typical repair

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

section requirements shown on the plans, the pavement repair shall match or exceed the thicknesses of pavements removed. There shall be no payment for the repair of gravel surfaces or base courses. The price bid per linear foot for pavement repair shall include all work described in this specification section, related specification sections and as shown on the plans, including but not limited to: labor, materials, equipment, permits, fees, maintenance, proper offsite waste disposal, testing and incidentals. See also *Allowances – Section 0700 for Asphalt Pavement Repair* quantities to be included in the lump sum bid amounts for the various repair areas.

END OF SECTION

This Page Intentionally Blank

SECTION 02770

CONCRETE PAVEMENTS, CURBS & SIDEWALKS

1.0 GENERAL

1.1 Description: The Contractor shall furnish all materials, labor, equipment, supplies, testing, maintenance and incidentals necessary to construct and/or repair Portland cement pavements, including but not limited to pavements, sidewalks, curb, curb & gutter and valley gutters, v-shaped ditches and stamped and stained decorative concrete. Placement of concrete pavements shall be constructed on properly prepared subgrade and aggregate base as required for proper construction to the satisfaction of the engineer.

1.2 All materials, methods and workmanship shall be in accordance with the latest editions of the NC Department of Transportation (NCDOT), "Standard Specifications for Roads and Structures" and the "Roadway Standard Drawings" except as modified herein or other portions of the contract documents.

1.3 Contractor shall take all the necessary measures to prevent any damage to any public or private properties, structures, utilities, facilities, etc. Should any damage occur, the contractor shall be fully responsible for making the necessary repairs or replacements, at the contractor's expense, to the satisfaction of the engineer and the owner.

1.4 The contractor shall engage the services of a specialty subcontractor, at the contractor's expense, to construct stamped and stained decorative concrete sidewalk. The specialty subcontractor shall have a minimum of 5 years successful experience in the installation and repair of stamped and stained decorative concrete sidewalks. Stamped and stained decorative concrete sidewalk shall be constructed under the full time supervision of an experienced field superintendent. The specialty subcontractor shall have experience in creating artistic stamped and stained concrete with various effects, including numerous patterns, stains and combinations of stains and acid wash effects to create antiqued finished that are sealed, durable and suitable to withstand heavy traffic areas long term without degradation for 5 or more years. The contractor shall submit a resume of prior experience and a minimum of 3 references for the specialty subcontractor to the engineer and owner for review. If the owner objects to the specialty subcontractor due to inadequate experience or unfavorable references, the contractor shall be responsible for locating and engaging a specialty subcontractor acceptable to the owner.

1.5 Stamped and stained decorative sidewalks shall be in accordance with the requirements outlined herein and other portions of the contract documents, the NC Building Code, including ADA standards and any additional applicable local, state, national and international codes and regulations whichever, in the opinion of the engineer, has the most stringent requirements. The contractor will be responsible for obtaining any building permits required for construction and shall pay any associated fees imposed by the building inspections office.

2.0 MATERIALS

2.1 The contractor shall furnish all materials, equipment, labor and incidentals required to successfully accomplish all work to the satisfaction of the engineer and owner. All materials shall be new and in accordance with the NCDOT standards referenced in paragraph 1.2.

2.2 Concrete: shall be air entrained in accordance with NCDOT Standard Specifications and shall have a minimum compressive strength of 4,500 psi at 28 days unless noted otherwise on the plans. All concrete properties shall be in accordance with NCDOT requirements as specified in the NC Department of Transportation Standard Specifications for Roads and Structures. The maximum aggregate size for stamped and stained decorative concrete mixes shall be 3/8 inch.

2.3 Reinforcing: Deformed grade 60 rebar, ASTM A615 of the sizes & types shown on the plans.

2.4 Welded Wire Fabric: ASTM A185 of the sizes & weights shown on the plans.

2.5 Integral concrete coloring pigments shall be used as the base color with all stamped and stained concrete. All stamped and stained concrete sidewalk shall have the integral coloring pigment added at the batch plant and shall be thorough mixed in the mixer drum. The rate of integral coloring pigment shall be as recommended by the pigment manufacturer. Integral concrete coloring pigments shall be in accordance with ASTM C979-16. The pigment manufacturer shall have available a minimum of 12 colors.

2.6 Dry-shake concrete color hardeners shall be used as accent colors with stamped and stained concrete. Dry-shake color hardeners shall be available in a minimum of 12 colors. Color hardeners shall be capable of producing a wide array of vibrant color hues and effects and shall be designed to work into the top layer of concrete to increase concrete density and harden the concrete to create a surface that is stronger, wear resistant in heavy traffic areas, less permeable to deicing chemicals and water, resistant to UV degradation and resistant to damage from freeze and thaw cycles.

2.7 Acid wash shall be used for stamped and stained concrete to achieve proper coloration and for preparing the surface for sealant. Use in accordance with the coloring agent and sealer manufacturer's instructions.

2.8 Sealer for stamped and stained concrete sidewalks shall be a matte finish, commercial quality, solvent based penetrating sealer to be applied in 2 coats in accordance with the sealant manufacturer's instructions. Sealer shall have properties which result in a non-slip finished surface and shall provide UV protection, abrasion resistance, chemical resistance and shall act

as a water repellant. Sealer shall be Bluestone Tenon 100% Silane Sealer or Euclid Baracade Silane 100C or MasterProject H1000 or an equal pre-approved prior to receipt of bids.

2.9 Curing Agents: shall be in accordance with NCDOT Standard Specifications Section 1026.

2.10 Joint Filler: shall be in accordance with NCDOT Standard Specifications Article 1028-1.

2.11 Joint Sealant: shall be in accordance with NCDOT Standard Specifications Article 1028-4. Provide colors matching and blending with stained concrete for stamped concrete sidewalks.

2.12 Pavement Marking Materials: shall be approved by the NC Department of Transportation and shall be on the most current NC Department of Transportation's "Approved Products List."

3.0 EXECUTION

3.1 The Contractor shall construct concrete pavements at the required locations of the types and thicknesses indicated on the plans to the satisfaction of the engineer and owner. Improper pavements will be removed, properly disposed of off-site and replaced, at the contractor's expense, until satisfactory results are obtained. Bridge floors, curbs, structures, handrails and all other public and private properties shall be covered as needed to prevent splattering or other damage from occurring due to concrete operations.

3.2 The subgrade and aggregate base beneath Portland cement concrete pavement shall be prepared in accordance with NCDOT Standard Specifications. The contractor shall use an approved fine grading machine to produce final subgrade and aggregate base surfaces meeting the lines, grades, and cross sections required by the plans or necessary for the acceptable completion of the work. Except where specifically noted otherwise elsewhere all poured in place concrete sidewalk, pavements, ditches, curbs, gutters and other concrete shall be installed on a minimum 4" compacted thickness NCDOT ABC gravel base compacted to a minimum of 100% standard proctor density.

3.21 The surface of the aggregate 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 or damaged areas in the subgrade or base prior to placing concrete.

3.2.2 Hauling over the base course will not be allowed except where specifically permitted 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.

3.3 Concrete shall be handled in such a manner as to prevent segregation and kept free from mud, soil, or any other foreign matter.

3.3.1 The contractor is fully responsible for protecting concrete at all times, including but not limited to, the prevention of edge breakage, breakage of unhardened concrete, vandalism and rain or weather damage. Should any damage or detriment occur, the contractor shall replace the damaged concrete at the contractor's expense, to the engineer's satisfaction.

3.3.2 Where finishing operations must be completed after dark, artificial light acceptable to the engineer shall be provided by the contractor.

3.3.3 Paving operations shall not be undertaken or shall be discontinued when any of the following conditions exist:

- a) When a descending air temperature in the shade and away from artificial heat reaches 40°F, paving shall be stopped. Paving shall not be resumed until an ascending air temperature in the shade and away from artificial heat reaches 35°F.
- b) When the subgrade or base course is frozen.
- c) When aggregates to be used in the mix contain frozen particles.
- d) When air temperature in shade is 95°F and rising or the concrete temperature is greater than 95°F.

3.3.4 Where additional pavement must be placed adjacent to new pavement by machine methods, it shall not be placed until the concrete has attained a flexural strength of at least 450 psi. Construction equipment or hauling equipment will not be allowed over the pavement until the concrete has attained a flexural strength of 550 psi.

3.4 Concrete shall be placed using a slip form paver or fixed forms at the contractor's discretion and as required to properly complete the work.

3.4.1 Where a slip form paver is to be used, the concrete shall have sufficient cohesion to prevent appreciable slumping of the pavement edges. When the original mix design produces a concrete which will not meet these requirements, production shall be stopped or slowed and corrections to the mix shall be immediately made.

3.4.2 The slip form paver shall be an approved self-propelled machine(s) designed to spread, consolidate, screed, and float finish the concrete in one complete pass of the machine in such a manner that a minimum of hand finishing will be necessary to provide a dense and homogeneous pavement. The machine shall vibrate the concrete for the full width and depth being placed. The vibration shall be accomplished internally by vibrating tubes or arms

working in the concrete or with a vibrating screed or pan operating on the surface of the concrete. The slip form paver shall be equipped with forms of sufficient length and rigidity to adequately support the edges of the slab so as to permit any necessary hand finishing. The slip form paver shall be equipped with and utilize automatic controls for both horizontal and vertical control. These automatic controls shall be checked daily by the contractor and be working properly prior to beginning the days operations.

3.4.3 The slip form paver shall be operated with a continuous forward movement and all operations of mixing, delivering, and spreading the concrete shall be coordinated to provide uniform progress with stopping and starting of the paver held to a minimum. If for any reason it is necessary to stop the forward movement of the paver, the vibratory and tamping elements shall also be stopped immediately.

3.4.4 Surface smoothness and texture created by the slip form paver shall meet the requirements of NCDOT Standard Specifications Article 710-6 and Article 710-7 except that a longitudinal straight edge tolerance of 1/4 inch in 10 feet will apply to the area within 6 inches of the edge of pavement. The maximum acceptable edge slump shall be 1/4 inch.

3.4.5 Fixed forms shall be metal and of such section and design that they will adequately support the concrete and the construction equipment.

3.4.6 Fixed forms shall have a depth not less than the edge thickness of the pavement to be constructed and not more than 1 inch greater than the edge thickness of the pavement to be constructed. The base width shall be at least equal to the height of the form.

3.4.7 The top face of the fixed form shall not vary from a true plane more than 1/8 inch in 10 feet, and the upstanding leg shall not vary more than 1/4 inch.

3.4.8 Straight fixed forms 10 feet in length shall have at least 3 pin pockets. Straight forms 5 feet in length shall have at least 2 pin pockets.

3.4.9 Form pins shall be metal and shall be capable of holding the forms rigidly in place during construction operations. The engineer may require pin holes in the base to be sealed prior to placing subsequent pavement.

3.4.10 Fixed form sections shall be connected by a locking joint which shall keep the forms free from vertical and horizontal movement.

3.4.11 Straight fixed forms 10 feet in length shall be used on tangents and on curves having a radius of 200 feet or more. Forms for curves having a radius of between 200 feet and 50 feet may be either straight forms 5 feet in length or flexible forms. Forms for curves having a radius of less than 50 feet shall be flexible forms.

3.4.12 All fixed forms shall be thoroughly cleaned before being set and shall be thoroughly oiled before any concrete is placed. The bearing of the forms shall be checked and all areas of inadequate bearing shall be corrected.

3.4.13 All rejected forms which are not satisfactorily corrected immediately shall be removed from the project by the contractor.

3.4.14 Forms shall be set a sufficient distance in advance of the point where the concrete is being placed to provide for a continuous operation in placing the concrete and for proper inspection of line and grade.

3.5 The concrete shall be spread uniformly over the entire area between the forms without segregation. Spreading shall be done with a mechanical spreader except where hand methods are necessary due to pavement design, equipment breakdown, or other emergency.

3.5.1 After the concrete has been spread it shall be uniformly vibrated. Vibrators for full width vibration of concrete paving slabs may be either the surface pan type or the internal type with either immersed tube or multiple spuds. They may be attached to the spreader or the finishing machine, or may be mounted on the separate carriage. They shall not come in contact with the joint, load transfer devices, subgrade, or side forms. Machine mounted vibrators shall be either stopped or removed from contact with the concrete whenever the forward motion of the machinery is stopped. The frequency of the surface vibrators shall not be less than 3,500 impulses per minute and the frequency of the internal type shall not be less than 5,000 impulses per minute for tube vibrators and not less than 7,000 impulses per minute for spud vibrators.

3.5.2 When spud type internal vibrators, either hand operated or attached to spreaders or finishing machines, are used adjacent to forms, they shall have a frequency of not less than 3,500 impulses per minute.

3.6 Finishing and joints for concrete pavement, curb & gutter, sidewalks or miscellaneous concrete shall be in accordance with Article 710-6, Article 720-7, Article 846-3 or Article 848-3 of the NCDOT Standard Specifications for Roads and Structures as applicable. The final finish shall produce a pavement surface that is true to grade and uniform in appearance and free of irregular, rough, or porous areas. Following the finishing of the pavement by the screed and float and the checking with the straightedges, the surface of the pavement shall be further finished by brooming, burlap dragging, or other acceptable method which will produce a uniform surface texture acceptable to the engineer and owner. Broom and burlap drag finished shall be perpendicular to the direction of traffic unless specifically noted otherwise. Care should be taken in finishing concrete in order to avoid ridges or high places which will prevent water from draining properly. The use of excessive water during the finishing operations will not be permitted.

3.7 Concrete less than 72 hours old which may be subject to damage by freezing shall be adequately protected with insulating materials such as burlap, plastic sheets or other materials as approved by the engineer, until the concrete reaches an age of 72 hours. Concrete damaged as a result of freezing shall be removed and replaced by the contractor at no cost to the owner.

3.7.1 Protective covering which will protect the surface of the freshly placed pavement from rain shall be readily available each day at the location of each proposed day's operation prior to beginning work. Concrete damaged as a result of failure on the part of the contractor to adequately protect the concrete from rain and concrete damaged by improper use of protective covering shall be removed and replaced by the contractor at the contractor's expense.

3.8 Immediately after finishing operations have been completed and surface water has disappeared, all exposed surfaces of the pavement shall be cured by one of the methods covered by this article, unless otherwise approved by the engineer.

3.8.1 The selected curing method shall be applied to the edges of the pavement immediately after the forms are removed. The total curing period required shall not be less than 3 curing days for all methods. A curing day will be considered as any consecutive 24 hour period, beginning when the manipulation of each separate mass has been completed, during which the air temperature adjacent to the mass does not fall below 40°F.

3.8.2 The minimum rate of application of membrane curing compound shall be 1 gallon per 150 square feet when the application equipment is mechanically operated or 1 gallon per 100 square feet when the application equipment is hand operated. Mechanically operated application equipment shall be designed to apply a uniformly agitated continuous flow of the curing compound at the prescribed rate to all concrete surfaces. The membrane curing compound film shall be protected at all times and any damage shall be immediately repaired. The Contractor shall keep available a sufficient amount of polyethylene film, burlap, or other approved material to provide for protection of the concrete during rain or when the application equipment fails to apply the curing compound uniformly to all surfaces.

3.8.3 Sections of polyethylene film shall be spread in a manner which will prevent damage to the finished pavement surface. Lap joints of the sections shall be at least 12 inches wide and suitable precautions shall be taken to prevent the circulation of air beneath the film. The film shall be checked for damage when it is spread and while in use and any damaged sections shall be immediately repaired or replaced.

3.8.4 Sections of burlap shall be spread in a manner which will prevent damage to the finished pavement surface. Lap joints shall be at least 6 inches wide. The amount of burlap to be used shall be not less than 12 ounces per running yard based on a 40 inch width and may be either 1 layer of Class 4 burlap or 2 layers of Class 1, 2, or 3 burlap. The burlap shall be

thoroughly saturated prior to placing on the concrete and shall be kept thoroughly wet throughout the curing period.

3.9. Forms shall not be removed from freshly placed concrete until it has hardened sufficiently to resist spalling, cracking, or any other damage, but in no case until at least 24 hours after the concrete has been placed. Any honey-combed areas along the sides or edges of the slab shall be repaired by filling with mortar immediately after the forms have been removed. The mortar shall be a mix of 1 part of cement to 2 parts of fine aggregate.

3.10 All joints shall be constructed in accordance with the requirements of these specifications and the details shown on the plans. All joints shall be sawed or formed and sealed with joint sealer in accordance with the dimensions and details shown on the plans. Joints shall be sealed in accordance with the provisions of Article 700-12 of the NCDOT Standard Specifications for Roads and Structures.

3.10.1 Sawing to the full depth required by the plans to control random cracking shall be done as soon as the concrete has hardened sufficiently to be sawed without spalling and raveling but not more than 24 hours after the concrete is placed. The additional sawing necessary to provide the full joint width required by the plans shall be done no earlier than 10 days prior to the sealing of the joint.

3.10.2 The engineer may order any concrete pavement or shoulder where uncontrolled cracking has occurred prior to final acceptance to be removed and replaced by the contractor at no additional cost to the owner.

3.10.3 Transverse contraction joints shall be formed or sawn as applicable and constructed in accordance with the details, dimensions and intervals as shown on the plans.

3.10.4 Transverse construction joints shall be constructed by use of an approved form in an approved location whenever the placing of concrete is suspended for more than 30 minutes. When applicable, dowel bars of the size and spacing shown on the plans shall be used.

3.10.5 Transverse expansion joints shall be constructed in accordance with the details shown on the plans utilizing an approved joint assembly or joint filler. All joints shall be sealed with low modulus silicone sealant. Backer material and sealant shall be installed in accordance with the manufacturer's recommendations. Any failure of the joint material will be cause for rejection, and the joint shall be repaired as approved by the engineer at no additional cost to the owner. The concrete shall be at least 14 calendar days old before the joints are sealed. Joint sealer shall not be placed when the air temperature near the joint is less than 45°F. or is 45°F. and falling. The sealer shall be placed to reasonably close conformity with dimensions shown on the plans. Any unreasonable deviation will be cause for rejection. Any surplus joint sealer on the pavement shall be removed to the engineer's satisfaction.

3.10.6 Immediately after sawing the joint to the dimensions as shown on the plans, the resulting slurry shall be completely removed from the joint by flushing with a jet of water under pressure. Sand blasting shall be used to clean joint faces before joints are sealed. As many passes with a sand blaster as are necessary shall be made to provide a clean joint wall. After cleaning, the joint shall be thoroughly dry at the time of sealing. All joints shall be blown clear of deleterious materials with air using a nozzle pressure of at least 90 psi before installing the backer rod. Rotary screw compressors shall be used for this purpose and shall be equipped with properly operating traps capable of removing water and oil from the air.

3.11 Sections of concretes which are removed shall be neatly saw cut with suitable equipment. Sawing to the full depth of the existing concrete will be required without spalling or otherwise damaging the edges to remain. Where removed concretes are to be replaced or repaired, all contact surfaces between the existing concrete and repair concrete shall be completely coated with a suitable bonding agent applied in accordance with the manufacturer's instructions.

3.12 The owner shall engage the services of a qualified testing consultant to test the concrete for adherence to the referenced standards and make test cylinders for compressive strength tests. Testing and samples will be taken randomly as directed by the engineer. In addition, the engineer may require that cores be taken at random locations to determine whether the thickness meets the requirements designated for the project. Concrete which fails to meet the specified strength and other project requirements shall be removed and replaced to the satisfaction of the engineer and owner at the contractor's expense. Upon completion of corrective measures, testing will be re-performed to confirm that the specified density has been achieved. All costs associated with re-testing as a result of inadequate concrete will be paid for by the contractor.

3.13 The contractor shall furnish, install, remove, repair and replace pavement markings as shown on the plans, as necessary to restore preconstruction conditions or better and as required by the engineer. All pavement markings shall be as shown on the plans, in accordance with NCDOT Standard Specifications for Roads and Structures, in accordance with the NCDOT Roadway Standard Drawings and in accordance with the AASHTO Manual of Uniform Traffic Control Devices.

3.13.1 All pavement markings shall be applied using specially designed pavement marking application equipment in accordance with NCDOT requirements. The application equipment shall be maneuverable and manageable to the extent necessary to form straight lines and true arcs. All pavement marking application equipment shall be kept in proper working condition.

3.13.2 Glass beads shall be applied when required to the surface of pavement markings and shall be applied by an automatic dispenser attached to the marking equipment as required to provide the proper amount of retro-reflectivity and uniformly spread and properly embed the beads over the entire surface of the pavement marking.

3.13.3 Pavement markings shall not be placed when the pavement shows any visible signs of containing moisture, or it is anticipated that damage-causing moisture may occur during the installation and drying periods. Paint shall be applied only when the ambient air temperature and pavement surface temperature is a minimum of 40°F and rising and a maximum of 160°F. Thermoplastic pavement markings shall not be applied on existing pavement surfaces or new concrete pavements unless the ambient air temperature and the temperature of the pavement is 60°F and rising. Thermoplastic pavement markings shall not be applied on asphalt surfaces less than 12 hours old unless the ambient air temperature and the temperature of the pavement is 50°F and rising. Epoxy pavement marking shall not be applied unless the ambient air temperature and the pavement surface temperature is a minimum of 35°F and rising. Cold applied plastic pavement marking shall be installed per manufacturer's specifications.

3.13.4 The Contractor shall premark each installation of pavement marking materials prior to application, except when existing markings are visible. The premarking shall be a guide in placing the pavement markings.

3.13.5 To insure maximum possible adhesion, all pavements upon which new pavement markings are to be placed shall be properly prepared to accept the new pavement markings. The surface preparation shall include but not be limited to, cleaning, sealing and curing compound removal necessary for the markings to adhere to the pavement. All pavements shall be cleaned free of grease, oil, mud, dust, dirt, grass, loose gravel and other deleterious material, prior to the application of the pavement markings. The pavement surface area to be prepared including removal of curing compound shall be a minimum of 2 inches wider than the pavement markings to be placed. All new Portland Cement Concrete pavements which contain curing compound shall have all curing compound and surface laitance removed where long-life pavement markings will be placed. Curing compound removal shall be accomplished by high pressure water, sand or shot blasting methods.

3.13.6 When recommended by the manufacturer, a primer-sealer shall be applied to the area where pavement markings are to be placed. The primer-sealer shall be of the type recommended by the manufacturer of the pavement marking material.

3.13.7 The installed pavement marking material shall have a uniform thickness and smooth surfaced cross-section throughout its entire length. All pavement marking widths and lengths shall be not less than the dimensions specified in the plans and shall not exceed the dimension by more than 1/2 inch. Pavement marking lines shall be straight or of uniform curvature and shall conform with the tangents, curves, and transitions as indicated on the plans and required for site specific requirements. The finished lines shall have well defined edges and be free of horizontal fluctuations. The lateral deviation of the finished lines shall not exceed 1/2 inch from the proposed location alignment at any point. Any greater deviations shall be sufficient cause for requiring the material to be removed and replaced at no additional cost to the owner.

3.13.8 The contractor shall protect the pavement markings until they are track free. Any markings tracked by a vehicle or otherwise damaged shall be removed by methods acceptable to the engineer and replaced at the contractor's expense. The contractor shall be responsible for removing all pavement marking materials spilled on the road surface by a method acceptable to the engineer.

3.13.9 All pavement marking materials shall be applied to the minimum thicknesses for each particular type required by Division 12 of the NCDOT Standard Specifications.

3.13.10 Pavement markings installed by the contractor which prematurely deteriorate, fail to adhere to the pavement, do not meet dimensional tolerances, lack reflectorization, or are otherwise unsatisfactory, during the life of the project shall be replaced by the contractor at the contractor's expense.

3.14 Stamped and stained concrete sidewalk shall be installed by a qualified, experienced decorative concrete specialty subcontractor. The work shall be in accordance with American Concrete Institute and American Society of Concrete Contractors Decorative Concrete Council except as modified herein and other portions of the contract documents.

3.14.1 Within 20 consecutive calendar days after the owner's construction notice to proceed, the stamped and stained decorative concrete specialty contractor shall provide a digital shop submittal on stamped and stained decorative concrete containing, the specialty subcontractor's resume, a minimum of 3 references from previous decorative concrete work (including project name, location, name of reference contact and current contact address, email and telephone number), a minimum of 12 photographs of showing different styles and colors of stamped and stained decorative concrete work, stencil choices, color choices and finish choices. The digital submittal shall include information on all coloring agents, sealers and other products to be used in the completion of the work.

3.14.2 The selection of the finish texture of the stamped and stained decorative concrete shall be selected by the owner, at the owner's sole discretion, from wide array of stencil stamp patterns, to include, at a minimum, Large and Small Ashlar Jointed Slate or Paver Pattern, Seamless Natural Slate, Seamless Natural Stone, Cobblestone, Flagstone, Weathered Wood Plank, Running Bond Pavers, Cobblestone Fan and other manufactured stencil patterns available on the market.

3.14.3 After receipt and review of shop submittals, the specialty stamped and stained decorative concrete subcontractor shall meet on at the owner's office with the owner and engineer to finalize the selection of the stamped concrete pattern and colors. Within 15 calendar days following this meeting, the contractor shall create a 4' x 4' mock up decorative sidewalk panel at a designated location on campus in the owner selected finished product. If the mock up sidewalk panel is acceptable to the owner, the construction of stamped and stained decorative concrete sidewalk in designated locations may proceed. If the owner

requests the creation of additional mock up sidewalk panels in alternate stencil patterns and/or colors, the subcontractor shall construct up to a maximum of four (4) mock up sidewalk panels at owner designated locations for the owner's review and selection of the final decorative design. The owner may, at their discretion, waive the requirement to construct mock up sidewalk panels. The contractor shall be paid for two (2) square yards of Stamped and Stained Decorative Concrete Sidewalk, at the unit bid price, for each mock up panel created. The contractor shall be responsible for removing and disposing of mock up panels if the owner requests their removal.

4.0 METHOD OF MEASUREMENT & BASIS OF PAYMENT

4.1 The contractor shall include, in all unit bid prices for all work related to *Concrete Pavements, Curbs and Sidewalks* all labor, materials, equipment, supplies, hardware, fasteners, excavation, backfill, borrow materials, select materials, bedding materials, aggregate base, removal/cleaning/storing pavers to be turned over to owner, demolition, geotextiles and filter fabrics, dewatering, stone, drainage course materials, select backfill, formwork, concrete, concrete stencils and stains, sealers, pigments, concrete pumping, anchors, temporary shoring and support systems, protection of subgrade and other materials and conditions, specialty subcontractors, specialty equipment and methods to protect existing paver surfaces and other areas, compaction, temporary chain link fencing, safety and security measures, traffic control, vehicle and pedestrian way maintenance, dust control, chemicals, clean-up, erosion control, seeding & mulching, temporary gravel surfaces and temporary pedestrian boardwalks, surface repair and restoration, temporary gravel surface maintenance, disposal of waste materials, miscellaneous fees, construction and record drawing surveys by a qualified NC Professional Land Surveyor, shop drawings, record drawings, coordination with utility owners, coordination with WCU Facilities Management and others affected by the project including any delays resulting thereof and incidental costs as necessary to complete the project as shown on the plans, property restoration and any other incidental work not specifically measured to the satisfaction of the engineer and owner. All materials needed, whether shown on the plans or not shown on the plans, shall not be measured and paid for as such, but shall be included in the prices bid for related work.

4.2 Stamped and Stained Decorative Concrete Sidewalk: shall include everything described by paragraph 4.1 above, shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per SQUARE YARD specified in the bid, complete, and to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for Stamped and Stained Decorative Concrete Sidewalk* quantities to be included in the lump sum bid amounts for the various repair areas.

4.3 Concrete V-Shaped Ditch: shall include everything described by paragraph 4.1 above, shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per LINEAR FOOT specified in the bid, complete, and to the satisfaction of the owner and engineer. Concrete V-Shaped Ditch will be measured along the

centerline of the ditch for payment at the price per LINEAR FOOT as measured by the engineer. Concrete V-Shaped Ditch shall be installed on a 6" compacted thickness NCDOT ABC base course compacted to 100% standard proctor density. Concrete V-Shaped Ditch shall be a 2 ft wide "Valley Gutter" in accordance with NCDOT Standard 846.01. The valley of the Concrete V-Shaped Ditch shall be set at elevations and grades such that the grass areas along both sides of the ditch slope at 2% into the V-Shaped Ditch as measured perpendicular to the ditch. This will require grading, topsoiling and establishing new permanent grass along both sides of the ditch to a maximum of 4 ft away from the ditch centerline as measured perpendicular to the ditch. The upstream and downstream ends of the Concrete V-Shaped Ditch shall be smoothly transitioned into connecting surface profiles. See also *Allowances – Section 0700 for Concrete V-Shaped Ditch* quantities to be included in the lump sum bid amounts for the various repair areas.

4.4 Concrete Curb & Gutter Repair: shall include everything described by paragraph 4.1 above, shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per LINEAR FOOT specified in the bid, complete, and to the satisfaction of the owner and engineer. Concrete Curb & Gutter Repair will be measured along the toe of the gutter for payment at the price per LINEAR FOOT as measured by the engineer. Concrete Curb & Gutter Repair shall be installed on a 6" compacted thickness NCDOT ABC base course compacted to 100% standard proctor density. Concrete Curb & Gutter Repair shall match existing curb and gutter dimensions and shall be in accordance with NCDOT Standard 846.01. The length of Concrete Curb & Gutter Repair shall be minimized to the extent possible but shall extend to existing joint locations on both sides of the repair section. The sections of curb & gutter to be removed shall be pre-approved by the engineer prior to demolition. See also *Allowances – Section 0700 for Concrete Curb & Gutter Repair* quantities to be included in the lump sum bid amounts for the various repair areas.

4.5 Standard Concrete Sidewalk Repair: shall include everything described by paragraph 4.1 above, shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per SQUARE YARD specified in the bid, complete, and to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for Standard Concrete Sidewalk Repair* quantities to be included in the lump sum bid amounts for the various repair areas.

END OF SECTION

This Page Intentionally Blank

SECTION 02780

BRICK PAVERS AND INCIDENTALS

1.0 GENERAL

1.1 Description: The Contractor shall furnish all materials, labor, equipment, supplies, design, testing, maintenance and incidentals necessary to remove, repair, modify, install and maintenance sidewalks and exterior surfaces consisting of unit modular pavers made of clay brick pavers and/or concrete brick pavers and related appurtenances at the locations, elevations and dimensions indicated on the plans. This section applies to brick paved areas used for pedestrian traffic, light vehicle traffic and occasional emergency vehicles and fire truck access. In general, brick paver systems shall consist of unit brick and concrete paver surface properly set on a compacted sand bed over a prepared and compacted stone and/or concrete base with geotextile reinforcement/filter cloth underlayment on existing, properly prepared, subgrade approved by the owner's geotechnical engineer.

1.2 The contractor shall have a minimum of 5 years experience in the installation, repair and maintenance of brick paver hardscape surfaces and related appurtenances. Brick paver surfaces shall be constructed under the full time supervision of an experienced field superintendent. The completed brick paver surfaces and incidentals shall be properly constructed and in accordance with the contract documents and related standards to the satisfaction of the engineer and owner.

1.3 Brick paver systems and construction shall be in accordance with the requirements outlined herein and other portions of the contract documents, the NC Building Code, including ADA standards and any additional applicable local, state, national and international codes and regulations whichever, in the opinion of the engineer, has the most stringent requirements. The contractor will be responsible for obtaining any building permits required for construction and shall pay any associated fees imposed by the building inspections office.

1.4 Brick paver systems and construction shall be in accordance with the standards and recommendations of the Brick Industry Association and the Interlocking Concrete Pavement Institute and the National Concrete Masonry Association except as modified herein and other portions of the contract documents. Where standards vary, the engineer shall provide direction and the final determination in which standard applies.

1.5 The contractor is responsible for protecting existing paver surfaces from breakage, chipping, settlement, displacement and movement or any other damage as a result of, directly or indirectly, from construction activity. The contractor shall not traverse over any areas having brick or concrete unit paver surfaces with any vehicle without express permission of the owner, in which case, only light vehicles classified by the NCDOT as passenger cars or pickups will be allowed. Where vehicle access over paver areas with light vehicles is allowed by the owner, the surface of the pavers to be crossed shall be made over temporary mats or

temporary surface suitable for protecting pavers from damage or displacement. Under no circumstances will heavy loaded vehicles, concrete trucks, equipment, forklifts, or heavy off highway vehicles be allowed to traverse over paver surfaces. No loaded concrete truck or dump trucks will be allowed to traverse over paver areas. Concrete must be pumped to construction areas. The contractor shall take all the necessary measures to prevent any damage to any other public or private properties, structures, utilities, facilities, etc. Should any damage occur to paver surfaces or any other public or private properties, regardless of the situation or precautions taken by the contractor, the contractor shall be fully responsible for making the necessary repairs or replacements, at the contractor's expense, to the satisfaction of the engineer and owner.

2.0 MATERIALS

2.1 The contractor shall furnish all materials, equipment, labor and incidentals required to successfully accomplish all work to the satisfaction of the engineer and owner. Other than reuse of existing pavers, all materials shall be new and in accordance with the contract documents.

2.2 All reclaimed pavers and new materials shall be stored on pallets and elevated platforms, under cover, and in a dry location to prevent their soiling or deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and or other causes. Pavers shall be loading in suitable bins and stored in a manner which prevents breaking, chipping, staining or otherwise defacing the units. Units that are damaged or have manufacturer imperfections shall be replaced if objectionable to the engineer or owner.

2.3 The contractor is responsible for carefully removing pavers without damage from identified and approved repair areas, cleaning and storing the removed pavers in a safe and secure location. Pavers that are broken, chipped, stained, or otherwise damaged, lost or stolen will be replaced by the contractor, at the contractor's expense, with new pavers of matching colors and dimensions and manufactured for exterior commercial heavy duty use in accordance with ASTM Standard C1272.

2.4 Setting bed sand for pavers shall be clean commercial quality sand in accordance with ASTM Standard C33.

2.5 Paver joint sand shall be commercial quality polymeric joint sand. Polymeric joint sand shall be Alliance Gator Maxx G2, Dominator Solid-Flex, Sakrete Paver Set or an equal product, pre-approved by the engineer prior to receipt of bids. Paver joint sand color shall be provided in an owner selected color. The minimum number of colors that shall be available for the owner's color selection shall be brown, ivory, beige, gray, white, black and red. Polymeric sands shall be designed and manufactured for use in joint widths ranging from 1/16" up to 3/16".

2.6 Aggregate Base Course: shall be clean, well-graded, compactable aggregate in accordance with *Aggregate Base & Gravel Surfaces - Section 02720* and the NCDOT Standard Specifications, latest edition.

2.7 Stone: for use as drainage course shall be clean washed stone as specified on the drawings and other portions of the contract documents and shall be in accordance with applicable sections of the NCDOT standard specifications.

2.8 Concrete: exposed to above ground conditions shall be air entrained 5% \pm 1. All concrete shall have a minimum compressive strength of 4,500 psi at 28 days unless higher strength is required elsewhere in the contract documents. Concrete properties shall be in accordance with *Concrete Pavements, Curbs and Sidewalks – Section 02770*.

2.9 High Strength, Structural Geotextile Filter Fabric: shall be a monofilament polypropylene yarn woven into a high strength filter fabric specifically designed and manufactured to provide soil stabilization, base reinforcement, separation and filtration. The geotextile shall provide biaxial reinforcement in tension. Structural Geotextile Filter Fabric shall meet the following minimum standards, strengths and properties. Testing laboratory shall be accredited by the Geosynthetic Accreditation Institute.

- A. Minimum Ultimate Tensile Strength = 3600 lbs/ft (ASTM D4595)
- B. Minimum Tensile Strength @ 5% strain = 1500 lbs/ft (ASTM D4595)
- C. Minimum Grab Tensile Strength = 400 lbs (ASTM D4632)
- D. Maximum Grab Strength Elongation = 10% (ASTM D4632)
- E. Minimum Trapezoid Tear Strength = 135 lbs (ASTM D4533)
- F. Minimum CBR Puncture Strength = 1450 lbs (ASTM D6241)
- G. Minimum Flow Rate = 60 gpm/ft² (ASTM D4491)
- H. Minimum Permittivity 0.9 sec⁻¹ (ASTM D4491)

2.10 Standard Filter Fabric: shall be non-woven, needle punched fabrics specifically designed and manufactured for long term subsurface drainage applications. All drainage course stone shall be completely encapsulated in geotextile filter fabric. The filter fabric shall be as specified by the wall engineer and shall also meet the minimum strength and physical properties listed in the following table. Additionally, filter fabric minimum flow rate shall be 135 gallons per minute.

Property	Test Method	Units	Elongation \geq 50%
Grab Tensile Strength	ASTM D 4632	N (lbs)	500 (112)
Sewn Seam Strength	ASTM D 4632	N (lbs)	450 (101)
Tear Strength	ASTM D 4533	N (lbs)	180 (40)
Puncture Strength	ASTM D 4833	N (lbs)	180 (40)
Burst Strength	ASTM D 3786	kPa (psi)	950 (138)
Ultraviolet Stability	ASTM D 4355	%	50

2.11 Stainless Steel L-Shape: shall be new, clean material as specified on the plans and shall be ANSI 304 or 316 stainless steel anchored with high strength stainless steel anchors as detailed on the drawings.

3.0 EXECUTION

3.1 The Contractor shall construct interlocking brick paver system at the required locations and at the required elevations, grades, alignment and dimensions to the satisfaction of the engineer and owner. Improper brick paver construction will be removed and replaced, at the contractor's expense, until results are obtained that are satisfactory to the owner and engineer. Any temporary security and safety measures necessary will be provided, installed and maintained by the contractor and removed by the contractor when no longer needed.

3.2 Where existing unit pavers are to be retained by the owner and/or reclaimed and reused in repair work, the contractor shall carefully remove, clean and store existing pavers in a dry, secure location without breakage, chipping, staining, or other damage to the satisfaction of the owner and the engineer. The contractor shall replace any damaged or lost pavers with new pavers having matching colors and dimensions. The contractor will also be responsible for replacing lost or stolen pavers with new pavers having matching colors and dimensions. Any excess reclaimed pavers, not incorporated into the work, will be turned over to the owner in good condition, for their ownership and future use.

3.3 Excavation and subgrade preparation shall be in accordance with *Earthwork – Section 02200* and other portions of the contract documents. The contractor shall use drains, pumps, heavy duty polyethylene sheeting and other means necessary to protect exposed subgrade materials from damage and as needed to maintain the moisture content in the subgrade at a level acceptable to the owner's geotechnical engineer while also preventing erosion and loss of sedimentation. Subgrade conditions that are initially acceptable to the owner's geotechnical engineer and are damaged during construction, will be corrected by the contractor, at the contractor's expense, in accordance with the recommendations of the owner's geotechnical engineer.

3.4 New, repaired and modified paver finished surfaces shall comply with all federal, state and local guidelines, rules and recommendations for slope, flatness, waviness, planarity and smoothness for exterior rolling and walking surfaces. The finished paver surface shall match proposed grades and elevations as shown on the plans and shall be acceptable to the owner and engineer without low areas, waviness or other objectionable conditions. Edge of all adjacent pavers shall be at matching elevations and slopes so that paver edges do not protrude up and create trip edges.

3.5 Finished paver surfaces shall have cross slopes, measured perpendicular to the pedestrian traffic path, between a minimum of 1.00% to a maximum of 2.00%. Where paver

surfaces accommodate multiple directions of pedestrian traffic, the finished paver surface, as measured in every direction, shall have slopes between a minimum of 1.00% to a maximum of 2.00%. Finished paver surfaces having a single direction of pedestrian traffic, shall have a maximum running slope, in the direction of foot traffic, of less than 5.00%.

3.6 Where pavers are replacing and/or resetting existing paver surfaced areas, the repaired area brick patterns, brick shapes, brick colors, edge and pattern lines and paver alignments shall match and blend into the surrounding existing in a seamless manner acceptable to the owner and engineer.

3.7 During construction, the contractor shall take every precaution and take additional measures to prevent pavers, curbs and other existing improvements that are to remain from shifting, settlement and movement due to excavation, settlement, unbalanced lateral earth pressure and other adverse or detrimental conditions. Limit the areas of excavation open at any one time and adequately support and/or adequately shore excavations, curbs, pavers and structures as needed to prevent unfavorable conditions and damage to existing improvements to remain.

3.8 High strength Structural Filter Fabric and Standard Filter Fabric shall be installed in the locations and to the limits specified on the drawings and other portions of the contract documents. Geotextiles shall be installed as recommended by the manufacturer and in accordance with the recommendations of the owner's geotechnical engineer during construction. The fabric shall be stretched taut in every direction prior to covering with material. Only full width rolls as provided by the manufacturer shall be utilized and all joints shall be overlapped by a minimum of 12 inches.

3.9 Aggregate base courses, washed stone, sand and drainage courses shall be installed and thoroughly compacted and/or consolidated as indicated on the drawings, other portions of the contract documents and as recommended by the owner's geotechnical engineer during construction.

3.10 Where necessary, pavers shall be neatly saw cut and/or routed with diamond edged wet cutters and the cut edges neatly beveled with 1/8" dia. radii with diamond edged wet cutters, while maintaining proper joint spacing and to the satisfaction of the owner and engineer. Where necessary, for accommodating clean-outs, grates or other circular appurtenances located within paver areas, neatly route circular arcs in individual pavers as needed to create even joints between the pavers and the appurtenance with spacing requirements being the same as specified for paver to paver spacing and to the satisfaction of the owner and engineer.

3.11 Paver joint spacings shall be uniform and in straight lines, uniform arcs and correct alignment for the paver patterns in any particular location and to the satisfaction of the owner

and engineer. The maximum limits of joint spacing at any locations shall be no less than 1/16 inch nor more than 3/16 inch.

3.12 Polymeric joint sand shall be applied in accordance with the manufacturer's instructions and as needed to completely fill all joints. Provide multiple applications as needed to fill all joints up to the exposed surface of the paver. Any joints which settle or are otherwise not filled 60 calendar days after substantial completion of the project shall be re-filled with polymeric joint sand as needed to completely fill all joints.

3.13 Following completion of all work, the contractor shall thoroughly clean the completed paver surface without damaging joints or other aspects of the finished work. The finished paver surface and other existing surface finishes in the vicinity of construction shall be made clean and free of staining, dirt, debris or other objectionable discoloration by the contractor to the satisfaction of the owner and engineer.

4.0 METHOD OF MEASUREMENT & BASIS OF PAYMENT

4.1 The contractor shall include, in all unit bid prices for all work related to *Brick Pavers and Incidentals*, all labor, materials, equipment, supplies, hardware, fasteners, excavation, backfill, borrow materials, select materials, bedding materials, aggregate base, bedding sand, removal/cleaning/storing pavers to be reused, new pavers where needed, paver milling and cutting, polymeric joint sand, geotextiles and filter fabrics, dewatering, stone, drainage course materials, select backfill, formwork, concrete, concrete pumping, stainless steel shapes, drilling, cutting and welding, stainless steel anchors, temporary shoring and support systems, protection of subgrade and other materials and conditions, specialty equipment and methods to protect existing paver surfaces and other areas, compaction, temporary chain link fencing, safety and security measures, traffic control, vehicle and pedestrian way maintenance, dust control, chemicals, clean-up, erosion control, seeding & mulching, temporary gravel surfaces and temporary pedestrian boardwalks, surface repair and restoration, temporary gravel surface maintenance, disposal of waste materials, miscellaneous fees, construction and record drawing surveys by a qualified NC Professional Land Surveyor, shop drawings, record drawings, coordination with utility owners, coordination with WCU Facilities Management and others affected by the project including any delays resulting thereof and incidental costs as necessary to complete the project as shown on the plans, property restoration and any other incidental work not specifically measured to the satisfaction of the engineer and owner. All materials needed, whether shown on the plans or not shown on the plans, shall not be measured and paid for as such, but shall be included in the prices bid for related work.

4.2 Brick Paver Removal and Reset: shall include everything described by paragraph 4.1 above, shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per SQUARE YARD specified in the bid, complete, and to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for Brick Paver Removal and Reset* quantities to be included in the lump sum bid amounts for the various repair areas.

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

4.3 Hidden Concrete Edge Support: shall include everything described by above paragraph 4.1, shall be as indicated on the drawings and other portions of the contract documents and shall be paid for at the unit price per LINEAR FOOT specified in the bid, complete, and to the satisfaction of the owner and engineer. See also *Allowances – Section 0700 for Hidden Concrete Edge Support* quantities to be included in the lump sum bid amounts for the various repair areas.

4.4 Should the owner select to accept Add Alternate #1, then the Unit Price Added for Alternate #1 Brick Paver Removal and Reset With a Concrete Base Course shall be ADDED to the unit bid price for Brick Paver Removal and Reset; and shall include additional work described by above paragraph 4.1, as detailed on the plans and described in other portions of the contract documents and shall be paid for at the add alternate unit bid price which will be the unit cost per square yard to be ADDED TO UNIT PRICE U1.

END OF SECTION

This Page Intentionally Blank

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

FORM OF PROPOSAL

Project: CENTRAL PLAZA DRAINAGE AND LANDSCAPE IMPROVEMENTS

Western Carolina University

Bidder: _____

Cullowhee, North Carolina

Date: _____

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The bidder further declares that he has examined the site of the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed. The bidder further declares that he and his subcontractors have fully complied with NCGS 64, Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

The Bidder proposes and agrees if this proposal is accepted to contract with the State of North Carolina through the Western Carolina University in the form of contract specified below, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of

Central Plaza Drainage and Landscape Improvements

in full in complete accordance with the plans, specifications and contract documents, to the full and entire satisfaction of the State of North Carolina and Western Carolina with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and the contract documents, for the sums listed in the following bid schedules.

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

Bidder's Name:_____.

BID SCHEDULES

Bidder agrees to complete the Work in accordance with the Contract Documents for the prices listed in the following Bid schedules. Each and every blank must be filled in with the Bidder's pricing in all bid schedules, unit price schedules and alternate schedules for a Bid to be considered as valid. No conditional or incomplete Bid will be accepted. The Owner reserves the right to reject all bids.

The Owner reserves the exclusive and unqualified right to accept the lowest qualified and responsible bidder or reject all bids. The selection of bids and/or alternates will be based on prices received, available funding and as determined by the Owner to be in the best interest of the project. The Owner reserves the right to select the lowest responsible bidder on the basis of the total bid price and an evaluation of alternate bid prices and/or an evaluation of unit bid prices, including those unit prices applied to the base bid or separate from the base bid. The lowest Bid received will not necessarily be determined by the base bid amount alone. The Owner may reject a bid on the basis of a unit price or bid alternate price being deemed unreasonable in the Owner's opinion.

The bidder further proposes and agrees hereby to commence work under this contract on a date to be specified in a written order of the designer and shall fully complete all work thereunder within the time specified in the Supplementary General Conditions Article 23. Applicable liquidated damages amount is also stated in the Supplementary General Conditions Article 23.

Bidder's Name: _____.

BID SCHEDULES - SINGLE PRIME CONTRACT:

BASE BID:

The undersigned Bidder, having thoroughly familiarized themselves with all aspects of the project and local conditions affecting the Work, hereby agrees to furnish all labor, materials, equipment, supplies, services and incidentals necessary to complete all work under the Base Bid in accordance with the Bid Documents and to the satisfaction of the engineer and owner for the following prices. **See Allowances – Section 0700 for a description of unit priced quantities to be included in each Bid Item.**

BASE BID – INCLUDES REPAIR AREAS “A” THROUGH “E” PLUS GENERAL ALLOWANCES “K”

1. BID ITEM REPAIR AREA “A” (Complete, including all allowances):

_____ Dollars(\$)
(words)

2. BID ITEM REPAIR AREA “B” (Complete, including all allowances):

_____ Dollars(\$)
(words)

3. BID ITEM REPAIR AREA “C” (Complete, including all allowances):

_____ Dollars(\$)
(words)

4. BID ITEM REPAIR AREA “D” (Complete, including all allowances):

_____ Dollars(\$)
(words)

5. BID ITEM REPAIR AREA “E” (Complete, including all allowances):

_____ Dollars(\$)
(words)

6. BID ITEM GENERAL ALLOWANCES “K” (Complete, including all allowances):

_____ Dollars(\$)
(words)

TOTAL BASE BID:

\$ _____.

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

Bidder's Name:_____.

AA5: ADD ALTERNATE BID ITEM REPAIR AREA "I" (Complete, including all allowances):

_____ Dollars(\$)
(words)

AA6: ADD ALTERNATE BID ITEM REPAIR AREA "J" (Complete, including all allowances):

_____ Dollars(\$)
(words)

UNIT PRICE BID ITEMS:

The undersigned Bidder, having thoroughly familiarized themselves with all aspects of the project and local conditions affecting the Work, hereby agrees to furnish all labor, materials, equipment, supplies, services and incidentals necessary to complete all work described under each unit price bid item in accordance with the Bid Documents and to the satisfaction of the engineer and owner for the following unit prices.

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work or changes in a quantity of the work all in accordance with the contract documents. Final pay quantities for items with unit pricing will be measured and determined by the engineer.

<u>Item #</u>	<u>Description</u>	<u>Unit of Measurement</u>	<u>Unit Bid Price</u>
U1:	Brick Paver Removal and Reset	(SY)	\$_____/SY
	(_____ words) Dollars per square yard)		
U2:	Stamped and Stained Decorative Concrete Sidewalk	(SY)	\$_____/SY
	(_____ words) Dollars per square yard)		
U3:	Hidden Concrete Edge Support	(LF)	\$_____/LF
	(_____ words) Dollars per linear foot)		
U4:	Plastic Drainage Structure with Ductile Iron Grate	(EA)	\$_____/EA
	(_____ words) Dollars per each)		
U5:	NCDOT Standard 840.46 Concrete Drainage Structure with Cast Iron Grate	(EA)	\$_____/EA
	(_____ words) Dollars per each)		

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

Bidder's Name: _____.

U6:	12" HDPE Storm Drain Pipe	(LF)	\$ _____ /LF
	(_____ Dollars per linear foot)		
	words		
U7:	8" HDPE Storm Drain Pipe	(LF)	\$ _____ /LF
	(_____ Dollars per linear foot)		
	words		
U8:	Tie Into Existing Storm Drain Pipe	(EA)	\$ _____ /EA
	(_____ Dollars per each)		
	words		
U9:	Tie Into Existing Storm Drain Structure	(EA)	\$ _____ /EA
	(_____ Dollars per each)		
	words		
U10:	6" Underdrain	(LF)	\$ _____ /LF
	(_____ Dollars per linear foot)		
	words		
U11:	4" Underdrain	(LF)	\$ _____ /LF
	(_____ Dollars per linear foot)		
	words		
U12:	Slotted Edge Drain	(LF)	\$ _____ /LF
	(_____ Dollars per linear foot)		
	words		
U13:	Slotted Edge Drain Clean-out	(EA)	\$ _____ /EA
	(_____ Dollars per each)		
	words		
U14:	Drainage Cuts in Existing Concrete Curb	(EA)	\$ _____ /EA
	(_____ Dollars per each)		
	words		
U15:	Concrete V-Shaped Ditch	(LF)	\$ _____ /LF
	(_____ Dollars per linear foot)		
	words		
U16:	Asphalt Pavement Repair	(LF)	\$ _____ /LF
	(_____ Dollars per linear foot)		
	words		
U17:	Concrete Curb & Gutter Repair	(LF)	\$ _____ /LF
	(_____ Dollars per linear foot)		
	words		
U18:	Standard Concrete Sidewalk Repair	(SY)	\$ _____ /SY
	(_____ Dollars per square yard)		
	Words		

**Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina**

Bidder's Name:_____.

U19: Rock Excavation (CY) \$ _____ /CY
(_____ Dollars per cubic yard)

words

U20: Undercut with Stone Backfill (CY) \$ _____ /CY
(_____ Dollars per cubic yard)

words

U21: Undercut with Soil Backfill (CY) \$ _____ /CY
(_____ Dollars per cubic yard)

words

U22: 4 FT ID Precast Conflict Manhole (EA) \$ _____ /EA
(_____ Dollars per each)

words

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

Bidder's Name: _____.

MINORITY BUSINESS PARTICIPATION REQUIREMENTS

Provide with the bid - Under GS 143-128.2(c) the undersigned bidder shall identify **on its bid** (Identification of Minority Business Participation Form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. **Also** list the good faith efforts (Affidavit **A**) made to solicit minority participation in the bid effort.

NOTE: A contractor that performs all of the work with its own workforce may submit an Affidavit (**B**) to that effect in lieu of Affidavit (**A**) required above. The MB Participation Form must still be submitted even if there is zero participation.

After the bid opening - The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low bidder, the bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

An Affidavit (**C**) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the 10% goal established. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort and Affidavit **D** is not necessary;

*** OR ***

If less than the 10% goal, Affidavit (**D**) of its good faith effort to meet the goal shall be provided. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

Note: Bidders must always submit **with their bid** the Identification of Minority Business Participation Form listing all MB contractors, vendors and suppliers that will be used. If there is no MB participation, then enter none or zero on the form. Affidavit A **or** Affidavit B, as applicable, also must be submitted with the bid. Failure to file a required affidavit or documentation with the bid or after being notified apparent low bidder is grounds for rejection of the bid.

Bidder's Name: _____.

Bidder Representations

Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.

Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.

Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.

Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.

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.

Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.

Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

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 agreement or rules of any group, association, organization or corporation;

Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

Bidder has not solicited or induced any individual or entity to refrain from bidding; and

Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

Bidder's Name: _____.

Proposal Signature Page

The undersigned further agrees that in the case of failure on his part to execute the said contract and the bonds within ten (10) consecutive calendar days after being given written notice of the award of contract, the certified check, cash or bid bond accompanying this bid shall be paid into the funds of the owner's account set aside for the project, as liquidated damages for such failure; otherwise the certified check, cash or bid bond accompanying this proposal shall be returned to the undersigned.

Respectfully submitted this day of _____

(Name of firm or corporation making bid)

WITNESS:

(Proprietorship or Partnership)

By: _____

Signature

Name: _____

Print or type

Title _____

(Owner/Partner/Pres./V.Pres)

Address _____

ATTEST:

By: _____

Title: _____

(Corp. Sec. or Asst. Sec. only)

License No. _____

Federal I.D. No. _____

Email Address: _____

(CORPORATE SEAL)

Addendum received and used in computing bid:

Addendum No. 1 _____ Addendum No. 3 _____ Addendum No. 5 _____

Addendum No. 2 _____ Addendum No. 4 _____ Addendum No. 6 _____

Identification of HUB Certified/ Minority Business Participation

I, _____,
(Name of Bidder)

do hereby certify that on this project, we will use the following HUB Certified/ minority business as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone #	Work Type	*Minority Category	**HUB Certified (Y/N)

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

** HUB Certification with the state HUB Office required to be counted toward state participation goals.

The total value of minority business contracting will be (\$)_____.

State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of _____

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- ☐ **1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- ☐ **2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- ☐ **3 – (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- ☐ **4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- ☐ **5 – (10 pts)** Attended prebid meetings scheduled by the public owner.
- ☐ **6 – (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- ☐ **7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- ☐ **8 – (25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- ☐ **9 – (20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- ☐ **10 - (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

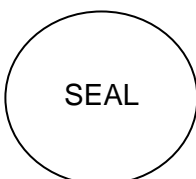
The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract with Own Workforce.

County of _____

Affidavit of _____
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____
_____ contract.
(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

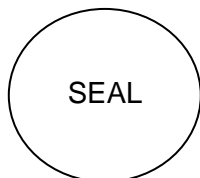
The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by HUB Certified/Minority Businesses

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by HUB certified/minority businesses as defined in GS143-128.2(g) and 128.4(a),(b),(e) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit.

This affidavit shall be provided by the apparent lowest responsible, responsive bidder within **72 hours** after notification of being low bidder.

Affidavit of _____ I do hereby certify that on the _____
(Name of Bidder)

(Project Name)
Project ID# _____ Amount of Bid \$ _____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. Attach additional sheets if required

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

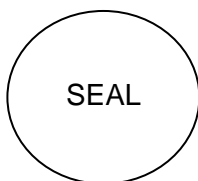
*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____



Signature: _____

Title: _____

State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

State of North Carolina AFFIDAVIT D – Good Faith Efforts

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by HUB Certified/ minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of _____ I do hereby certify that on the _____
(Name of Bidder)

Project ID# _____ (Project Name) Amount of Bid \$ _____

I will expend a minimum of _____% of the total dollar amount of the contract with HUB certified/ minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. (Attach additional sheets if required)

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Examples of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

- Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- Copies of quotes or responses received from each firm responding to the solicitation.
- A telephone log of follow-up calls to each firm sent a solicitation.
- For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
- Copy of pre-bid roster
- Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
- Letter detailing reasons for rejection of minority business due to lack of qualification.
- Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

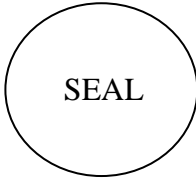
Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS THAT _____

_____ as principal, and _____, as surety, who is duly licensed to act as surety in North Carolina, are held and firmly bound unto the State of North Carolina* through _____ as obligee, in the penal sum of _____ DOLLARS, lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Signed, sealed and dated this ____ day of ____ 20__

WHEREAS, the said principal is herewith submitting proposal for _____ and the principal desires to file this bid bond in lieu of making the cash deposit as required by G.S. 143-129.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such, that if the principal shall be awarded the contract for which the bid is submitted and shall execute the contract and give bond for the faithful performance thereof within ten days after the award of same to the principal, then this obligation shall be null and void; but if the principal fails to so execute such contract and give performance bond as required by G.S. 143-129, the surety shall, upon demand, forthwith pay to the obligee the amount set forth in the first paragraph hereof. Provided further, that the bid may be withdrawn as provided by G.S. 143-129.1

_____(SEAL)

_____(SEAL)

_____(SEAL)

_____(SEAL)

_____(SEAL)

*(Community college projects: Delete State of North Carolina as owner and replace with community college name.)

This Page Intentionally Blank

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

FORM OF CONSTRUCTION CONTRACT

(ALL PRIME CONTRACTS)

THIS AGREEMENT, made the _____ day of _____ in the year of
20__ by _____ and _____ between _____

hereinafter called the Party of the First Part and the State of North Carolina through Western Carolina University hereinafter called the Party of the Second Part.

WITNESSETH:

That the Party of the First Part and the Party of the Second Part for the consideration herein named agree as follows:

1. Scope of Work: The Party of the First Part shall furnish and deliver all of the materials, and perform all of the work in the manner and form as provided by the following enumerated plans, specifications and documents, which are attached hereto and made a part thereof as if fully contained herein: advertisement; Instructions to Bidders; General Conditions; Supplementary General Conditions; Special Conditions; specifications; accepted proposal; contract; performance bond; payment bond; power of attorney; workmen's compensation; public liability; property damage and builder's risk insurance certificates; and the

Project Manual, seal dated 12/5/23;

and Drawings (Plans), titled:

Central Plaza Drainage & Landscape Improvements consisting of the following sheets: C1.0 General Information; C2.0 Existing Project Area Site & Demolition Plan; C3.0 Site Plan for Areas "A" Through "E" Proposed Repairs and Improvements; C4.0 Site Plan for Areas "F" Through "I" Proposed Repairs and Improvements; C5.0 Site Plan for Area "J" Proposed Repairs and Improvements C6.0 Details; C7.0 Details; all seal dated: 12/5/23

and the following addenda:

Addendum No. _____	Dated: _____	Addendum No. _____	Dated: _____
Addendum No. _____	Dated: _____	Addendum No. _____	Dated: _____
Addendum No. _____	Dated: _____	Addendum No. _____	Dated: _____

2. That the Party of the First Part shall commence work to be performed under this agreement on a date to be specified in a written order of the Party of the Second Part and shall fully complete all work hereunder within One Hundred and Fifty (150) consecutive calendar days from said date. For each day in excess thereof, liquidated damages shall be as stated in Supplementary General Conditions. The Party of the First Part, as one of the

considerations for the awarding of this contract, shall furnish to the Party of the Second Part a construction schedule setting forth planned progress of the project broken down by the various divisions or part of the work and by calendar days as outlined in Article 14 of the General Conditions of the Contract.

3. The Party of the Second Part hereby agrees to pay to the Party of the First Part for the faithful performance of this agreement, subject to additions and deductions as provided in the specifications or proposal, in lawful money of the United States as follows:

_____. (\$ _____).

Summary of Work included in Contract Award: _____

4. In accordance with Article 31 and Article 32 of the General Conditions of the Contract, the Party of the Second Part shall review, and if approved, process the Party of the First Party's pay request within 30 days upon receipt from the Designer. The Party of the Second Part, after reviewing and approving said pay request, shall make payments to the Party of the First Part on the basis of a duly certified and approved estimate of work performed during the preceding calendar month by the First Party, less five percent (5%) of the amount of such estimate which is to be retained by the Second Party until all work has been performed strictly in accordance with this agreement and until such work has been accepted by the Second Party. The Second Party may elect to waive retainage requirements after 50 percent of the work has been satisfactorily completed on schedule as referred to in Article 31 of the General Conditions.

5. Upon submission by the First Party of evidence satisfactory to the Second Party that all payrolls, material bills and other costs incurred by the First Party in connection with the construction of the work have been paid in full, final payment on account of this agreement shall be made within thirty (30) days after the completion by the First Party of all work covered by this agreement and the acceptance of such work by the Second Party.

6. It is further mutually agreed between the parties hereto that if at any time after the execution of this agreement and the surety bonds hereto attached for its faithful performance, the Second Party shall deem the surety or sureties upon such bonds to be unsatisfactory, or if, for any reason, such bonds cease to be adequate to cover the performance of the work, the First Party shall, at its expense, within five (5) days after the receipt of notice from the Second Party so to do, furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the Second Party. In such event no further payment to the First Party shall be deemed to be due under this agreement until such new or additional security for the faithful performance of the work shall be furnished in manner and form satisfactory to the Second Party.

7. The Party of the First Part attest that it and all of its subcontractors have fully complied with all requirements of NCGS 64 Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

IN WITNESS WHEREOF, the Parties hereto have executed this agreement on the day and date first above written in _____ counterparts, each of which shall without proof or accounting for other counterparts, be deemed an original contract.

Witness:

Contractor: (Trade or Corporate Name)

(Proprietorship or Partnership)

By: _____

Title: _____
(Owner, Partner, or Corp. Pres. or Vice Pres. only)

Attest: (Corporation)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

(CORPORATE SEAL)

Witness:

By: _____

Title: _____

This Page Intentionally Blank

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

FORM OF PERFORMANCE BOND

Date of Contract: _____

Date of Execution: _____

Name of Principal
(Contractor) _____

Name of Surety: _____

Name of Contracting
Body: _____

Amount of Bond: _____

Project _____

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind, ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body, identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the contracting body, with or without notice to the surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in _____ counterparts.

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

Witness:

(Proprietorship or Partnership)

Attest: (Corporation)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

(Corporate Seal)

Witness:

Countersigned:

(N.C. Licensed Resident Agent)

Name and Address-Surety Agency

Surety Company Name and N.C.
Regional or Branch Office Address

Contractor: (Trade or Corporate Name)

By: _____

Title: _____
(Owner, Partner, or Corp. Pres. or Vice
Pres. only)

(Surety Company)

By: _____

Title: _____
(Attorney in Fact)

(Surety Corporate Seal)

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

FORM OF PAYMENT BOND

Date of Contract: _____

Date of Execution: _____

Name of Principal
(Contractor) _____

Name of Surety: _____

Name of Contracting
Body: _____

Amount of Bond: _____

Project _____

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall promptly make payment to all persons supplying labor/material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in _____ counterparts.

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

Witness:

(Proprietorship or Partnership)

Attest: (Corporation)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec.. only)

(Corporate Seal)

Contractor: (Trade or Corporate Name)

By: _____

Title _____
(Owner, Partner, or Corp. Pres. or Vice
Pres. only)

(Surety Company)

Witness:

By: _____

Title: _____
(Attorney in Fact)

Countersigned:

(Surety Corporate Seal)

(N.C. Licensed Resident Agent)

Name and Address-Surety Agency

Surety Company Name and N.C.
Regional or Branch Office Address

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

Sheet for Attaching Power of Attorney

This Page Intentionally Blank

Western Carolina University
Central Plaza Drainage and Landscape Improvements
SCO ID #: 22-24778-01
WCU Project #: 2019-011
Cullowhee, North Carolina

Sheet for Attaching Insurance Certificates

This Page Intentionally Blank

APPROVAL OF THE ATTORNEY GENERAL

This Page Intentionally Blank

**CERTIFICATION BY THE OFFICE OF STATE
BUDGET AND MANAGEMENT**

Provision for the payment of money to fall due and payable by the

under this agreement has been provided for by allocation made and is available for the purpose of carrying out this agreement.

This _____ day of _____ 20____.

Signed _____
Budget Officer

This Page Intentionally Blank