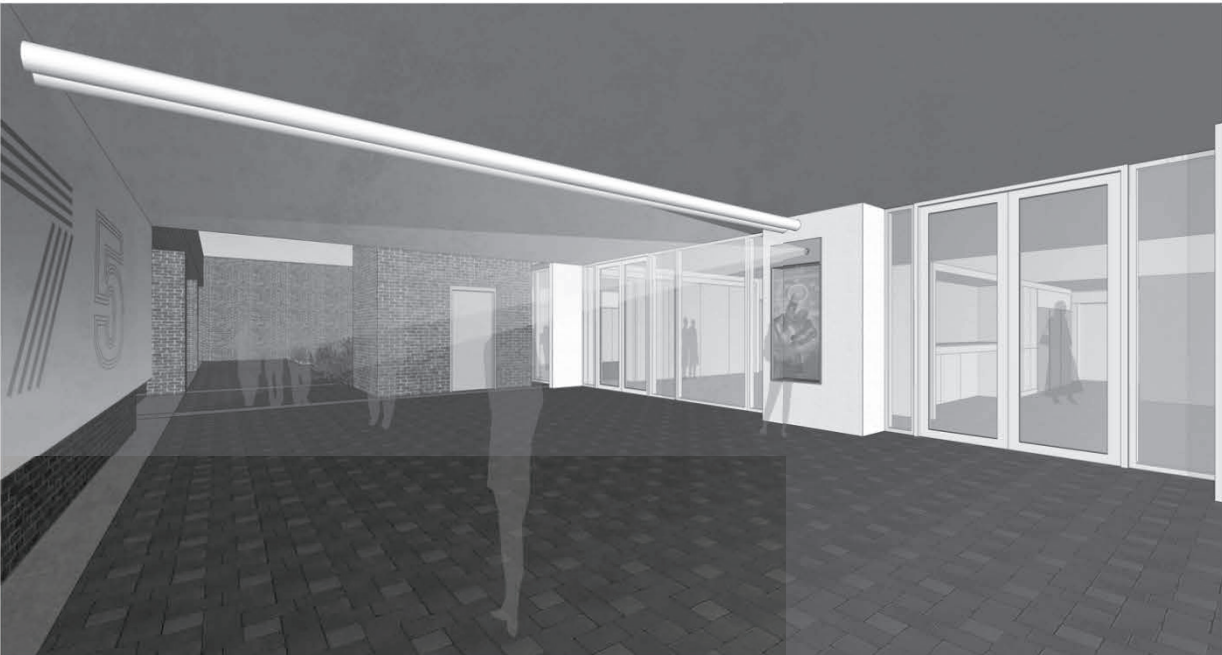


NCSU Brooks Hall Renovations – Phase I

NCSU#20222002 SCO# 22-25338-02A

Bid Documents

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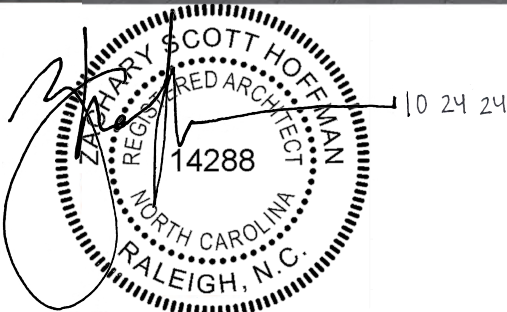


DESIGN TEAM

Architect

in situ studio

Responsible for all sections not explicitly listed below.



Structural Engineer

Lynch Mykins Structural Engineers

Responsible for 033000, 051200, and 054000.



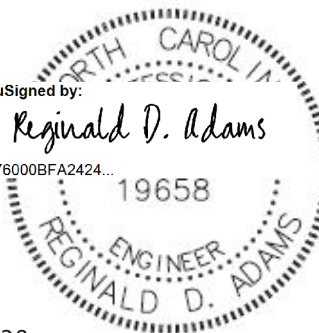
PME Engineer

Sigma Engineered Solutions, PC

[1] Responsible for Divisions 22 and 23.

[2] Responsible for Divisions 26 and 28.

DocuSigned by:
Mr. Reginald D. Adams
61D7600BFA2424...



10/25/2024

Div 26&28

[1] Div 22 & 23

ADVERTISEMENT FOR BIDS

Sealed proposals will be received until 3:00 pm on December 4, 2024 in Conference Room 101, Administrative Services III Building, 2601 Wolf Village Way, Raleigh, NC for the Brooks Hall Renovations, Phase I. At that time and place, bids will be opened and read.

A prebid meeting will be held on November 12, 2024 at 3:00 pm in room 118 of Brooks Hall at 50 Pullen Road, Raleigh, NC 27695.

Complete plans and specifications for this project can be obtained from Insitu Studio, 704 N Person St., Raleigh, NC 27604, 919-301-4750 during normal office hours for a deposit of \$300. Deposit checks must be made out to Insitu Studio and received by the Architect prior to shipment of documents.

For further information about the project, a list of pre-qualified general contractors and alternate locations to examine or receive bid documents, please go to the following NCSU web link:

[http:// facilities.ofa.ncsu.edu/category/ads/](http://facilities.ofa.ncsu.edu/category/ads/)

The State reserves the unqualified right to reject any and all proposals.

David Hammock, PE
NC State University
Design and Construction
2601 Wolf Village Way, Suite 331
Raleigh, NC 27695-7520

**Advertisement for Bids
&
Notice of Public Meeting for Proposed Alternate Bids for Preferred
Products**

Sealed proposals will be received by NC State University. Attention David Hammock, until 3:00 pm on December 4, 2024 in Conference Room 101, Administrative Services III Building 2601 Wolf Village Way, Raleigh, NC 27695 and immediately thereafter publicly opened and read for the furnishing of labor, material and equipment for the construction of:

NC State University
Brooks Hall Renovations, Phase I
SCO ID No.: 22-25338-02A
NC State Project No.: 202220022

Phase one of this project renovates the first floor of Brooks Hall's Matsumoto Wing to create flexible research space for the College of Design and includes offices, collaborative space, a break area, and K12 Lab. The scope also includes a new mechanical room with a central air handler that serves the renovated first floor and includes space for future AHUs, VAVs, distribution duct, utility chase, and a roof-mounted ERV that preconditions outside air.

Bids will be received for **single prime bid** contracts. All Proposals will be lump sum.

The following General Contractors have been pre-qualified to bid this job:

- ACH Raleigh, NC
- Bridgepoint.....Durham, NC
- CMC..... Bolton, NC
- Consigli Raleigh, NC
- CT WilsonDurham, NC
- Daniels & DanielsGoldsboro, NC
- Lomax Greensboro, NC
- McKenna..... Raleigh, NC
- Messer..... Raleigh, NC
- Monteith..... Raleigh, NC
- Riggs-Harrod Raleigh, NC
- Riley.....Cary, NC
- Salisbury & Moore Raleigh, NC
- Shelco..... Raleigh, NC
- WC Construction..... Winston-Salem, NC
- Whiting Turner Raleigh, NC

Bid documents are available for examination in the plan rooms:

1. iSQFT; <http://www.isqft.com/start/> handles Associated General Contractors plan room.
2. The local North Carolina offices of Dodge Data and Analytics;
3. The Eastern Regional Offices of CMD Group in Norcross, GA;
4. The offices of the Designer: Insitu Studio, 704 N Person St., Raleigh, NC 27604;
5. The North Carolina Institute of Minority Economic Development, Inc. (NCIMED) Plan and Resource Center at 114 W. Parrish St., 6th Floor, Durham, NC; 919-956-8889 or 919-287-3036
6. The Hispanic Contractors Association of the Carolinas (HCAC) in Winston-Salem, Charlotte and Raleigh Areas – 877-227-1680;

Complete plans and specifications for this project in electronic format can be obtained from Insitu Studio, 704 N Person St., Raleigh, NC 27604 during normal office hours after October 27, 2024. Email requests for the electronic documents may be sent to zach@insitustudio.us.

Full printed copies may be obtained by those qualified as prime bidders, upon deposit of Three hundred dollars (\$300) in cash or certified check with a minimum of 48 hours' notice to zach@insitustudio.us. The full plan deposit will be returned to those bidders provided all documents are returned in BOUND, good, usable condition within ten (10) days after the bid date.

Partial or full printed copies of the project documents may be purchased from Duncan Parnell, 201 Glenwood Ave, Raleigh, NC 27603. Phone number for ordering is 919-833-4677.

The State reserves the unqualified right to reject any and all proposals.

North Carolina State University has an affirmative policy of fostering, promoting and conducting business with minority owned enterprises. Minority contractors are encouraged to participate in the bidding process.

The bidder must include completed minority business subcontractor documentation form(s) with their proposal or the bid may be considered non-responsive and invalid.

Pre-Bid Meeting

A Pre-bid meeting will be held for all interested bidders at 3:00 pm on November 12, 2024 in Room 118 of Brooks Hall at 50 Pullen Road, Raleigh, NC 27695. The meeting will address project specific questions.

Notice of Public Meeting for Proposed Alternate Bids for Preferred Products.

An open public meeting will be held at 4:00 pm on November 12, 2024 in Room 118 of Brooks Hall at 50 Pullen Road, Raleigh, NC 27695. The meeting is to identify preferred brand alternates and their performance standards pertinent to this project.

In accordance with GS133-3, Section 64. (C) and State Construction Office procedures the following preferred brand items are being considered as Alternates by the owner for this project:

door access system (reader controllers, card readers, electronic door strikes, access cards), door hardware (locksets and cylinders, closers, panic hardware and strikes, locks and cores)

A copy of pertinent sections of the performance standards may be obtained by contacting the designer at the address or phone number noted above.

David Hammock, PE
NC State University
Design and Construction
david_hammock@ncsu.edu
919-515-2030

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Form of Payment Bond
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Sheet for Attaching Certificate of Insurance
Approval of The Attorney General
County Sales and Use Tax Report
Contractor Evaluation Form

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NCSU Decommissioning and Decontamination
NCSU Reuse, Recycling, and Waste
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**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
Revision 1 - May 2024: Article 23.b**

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.

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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. Should the work be delayed by both the owner and contractor, liquidated damages shall be apportioned to reflect the delays of each party. In the case of concurrent delays, contractor caused delays shall be accounted for before owner and designer caused delays.
- 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 allequipment 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.

SUPPLEMENTARY GENERAL CONDITIONS

SUPPLEMENTS

The following supplements added to the "Instructions to Bidders and General Conditions of the Contract" of the Division of State Construction, North Carolina Department of Administration, Twenty Fourth Edition January 2013. Where any article of the General Conditions is modified by these supplementns, the unaltered provisions of that Article, Paragraph, Subparagraph or Class shall remain in effect.

Article 1

- i. The project expediter shall be the General Contractor.

Article 14

- a. Add; The Project Superintendant shall be a direct employee of the General Contractor.

Article 23

- a. Add: "1. The Contractor shall commence work to be performed under this Contract on a date to be specified in written order from the Designer/Owner and shall fully complete all work hereunder after the notice to proceed and within 360 consecutive calendar days from notice to proceed. For each calendar day in excess of the above number of days, the Contractor shall pay the Owner the amount of (\$600.00) per day as liquidated damages reasonably estimated in advance to cover the losses to be incurred by the Owner should the Contractor fail to complete the Work within the time specified. If the Contractor is delayed at any time in the progress of his work by any act or negligence of the Owner, his employees or his separate contractor, by changes ordered in the work; by abnormal weather conditions; by any causes beyond the Contractor's control or by other causes deemed justifiable by Owner, then the contract time may be reasonably extended in a written order from the Owner upon written request from the contractor within ten days following the cause for delay. 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. The Contractor must show written proof of the required property insurance. The insurance policy should include a statement of Owner notification prior to it being terminated for any reason. Any contractor claim for compensable damages for delays is limited to delays caused solely by the owner or its agents.

Article 34

Modify Paragraph C as follows:

"The contractor shall purchase and maintain property insurance during the life of this contract, 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 risks of direct physical loss – (all perils). 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."

END OF SUPPLEMENTARY CONDITIONS

**SUPPLEMENTARY GENERAL CONDITIONS
(SGC's) OF THE CONTRACT**

**STANDARD FORM FOR CONSTRUCTION
CONTRACTS**

**NORTH CAROLINA STATE
UNIVERSITY**

NC State University Design and Construction Guidelines

Supplementary General Conditions

SUPPLEMENTARY GENERAL CONDITIONS (SGC's) OF THE CONTRACT

The use or reproduction of this document or any part thereof is authorized for and limited to use on projects of North Carolina State University, and is distributed by, through and at the discretion of the University for that distinct and sole purpose. This document supplements but does not alter in any way the requirements of the General Conditions of the Contract.

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1.0 SGC Article 1 – Definitions

- A. As defined in Article 1 of the General Conditions, the Supplementary General Conditions are considered part of the contract documents.
- B. The Owner is the State of North Carolina through North Carolina State University.
- C. Provide shall mean purchase, deliver, and install, new, clean, and completely operational, fully tested and ready for use.

2.0 SGC Article 14 – Construction Supervision and Schedule

- A. 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 benchmark nearby in a location where same will not be disturbed and where direct instruments sights may be taken.
- B. The designer shall designate a Project Expediter on projects involving two or more prime contracts. The Project Expediter shall be the General Contractor unless determined otherwise by the designer. The Project Expediter shall have the responsibilities described in Article 14.f. of the General Conditions.
- C. Project Construction Schedule. North Carolina State University requires a CPM schedule for all projects, regardless of size and/or dollar amount. Bar Chart schedules may be allowed on a case-by-case basis. All CPM schedules shall meet the requirements of the General Conditions as well as the following:
 - 1. The CPM Baseline Schedule or Updated Schedule shall consist of the computer files on electronic media necessary to recreate the schedule. Files shall consist of four discrete items:
 - a) The Activity description including the original and remaining durations, and percent complete. Show other computed information such as early and late computed start and finish times and various types of floats.
 - b) The logical predecessor and successor relationships that connect the various activities together to form a CPM network. All activities shall be linked with no

NC State University Design and Construction Guidelines

Supplementary General Conditions

constraints placed on any activity unless critical milestone dates are dictated in the contract.

- c) Constraints listing if any must exist.
- d) All hidden codes or constraints assigned to activities by the Scheduler, which help define the intended workflow or project organization.
- 2. Each schedule submittal shall include a cover letter, a narrative, a hard copy of the schedule and the schedule files on electronic media. The schedule update narrative should state what activity changes happened on the project, including missing data, upcoming changes, documented delays, potential delays and other facts.
- 3. Contractors and subcontractors shall include a minimum of five (5) full days in their base bid for their project superintendent and project manager to attend a preliminary scheduling meeting with the project expeditor. Each contractor shall attend additional scheduling meetings as required until an acceptable construction schedule conforming to the contract time is completed and approved via signing of the printed schedule by the single or each prime contractor (project manager and superintendent). Copies of the signed schedule shall be given to the Designer, Owner and each signatory; the original shall be displayed at the jobsite. The submitted schedule shall show the contract project completion date.
- 4. The schedule shall be updated monthly or at the Designer and/or Owner's request. The project expeditor shall make all updates, adjustments, corrections, etc., with input provided from the other prime or subcontractors. It will be the responsibility of each prime and/or subcontractor to either agree or disagree with the updated schedule via signing and dating the schedule submitted by the project expeditor or providing a written summary of schedule exceptions and/or inaccuracies.
- 5. Project expeditor is required to provide an updated construction schedule with each monthly payment application. It will be the responsibility of each prime and/or subcontractor to either agree or disagree with the updated schedule via signing and dating the schedule submitted by the project expeditor or providing a written summary of schedule exceptions and/or inaccuracies. Payment requests received without one or the other of the above will be considered incomplete and will be returned as being incomplete. The only contractor required to submit a copy of the updated progress schedule with his monthly payment application is the project expeditor.
- 6. A completion or finish schedule is required at 80% project completion, illustrating tasks remaining to complete the project. The designer and Owner are required to approve finish schedule.
- 7. Project expeditor shall include all relevant testing and inspections on the CPM schedule, including but not limited to: telecom/data wiring tests and as-built drawings, fire alarm system testing, fire suppression system testing, piping pressure testing, all applicable NFPA, DOI, DOL tests and commissioning activities.
- 8. The Contractor will schedule as Milestones in the CPM schedule and ensure they are met the following activities: MEPFP Coordination drawings, Casework and Fume Hood Submittals and shop drawings shall be submitted to the design team for review NO LATER than 30 days after the Notice To Proceed.

NC State University Design and Construction Guidelines

Supplementary General Conditions

3.0 SGC Article 23 - Time Of Completion, Delays, Extension of Time

- A. For each day in excess of the number of days shown below, the contractor(s) shall pay the owner liquidated damages in the amount of \$250 per consecutive calendar day. [Designer and Owner to jointly determine amount of LD's based on specific project requirements.]

☐

This project does not include Commissioning

- B. The time of completion for this project is _____ consecutive calendar days and begins on the date stated in the Designer's Notice to Proceed letter issued to the contractor.

☒

This project includes Commissioning

- B. The time of completion to SUBSTANTIAL COMPLETION for this project is 240 consecutive calendar days and begins on the date stated in the Designer's Notice to Proceed letter issued to the contractor. SUBSTANTIAL COMPLETION for this project is defined as the General Contractor and its subcontractors having completed the following:

1. GC's Pre-Final Punch List
2. Testing Adjusting and Balancing (TAB) is complete per the project specifications.
3. Pre-Functional Testing shall be complete and the completed report shall be issued to the design team prior to SUBSTANTIAL COMPLETION.

For a period not to exceed 1 [one] weeks following immediately after SUBSTANTIAL COMPLETION, the Owner's agents will perform Enhanced Start UP of MEP systems and punch list generation and back punch activities. The contractor will be responsible for assisting in all testing and punch activities including the completion of all adjusting, balancing, repairing, correcting, replacing and completing unacceptable or otherwise incomplete work identified by the design team.

NC State University Design and Construction Guidelines

Supplementary General Conditions

4.0 SGC Article 40 – Utilities, Structures, Signs

- A. UTILITIES FOR NEW BUILDINGS - The Project Expediter will make arrangements with the appropriate utility service providers to provide temporary utilities to the site. The Project Expediter shall bear the costs of providing all temporary utilities to the site and all charges for temporary utilities during the project duration.
- B. UTILITIES FOR EXISTING BUILDINGS – The Project Expediter will make arrangements with either the appropriate utility service providers or with NCSU (if the existing building is already metered) to provide temporary utilities to the site. The University will bear the cost of all temporary utilities except the use of supplemental generators for power. The contractor may use what is available on site without affecting the ongoing operations of the Owner in any way, but may not request additional services that are not already present. Anything additional required by the contractor will be procured and paid for by the contractor

Electricity: \$_____/KWH (kilo-watt hour)

Water: \$_____/CCS (hundred cubic feet)

Steam: \$_____/thousand pounds

Natural gas: \$_____/deca-therm

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

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[Designer shall incorporate this document into the specification in its entirety.]

1.0 Purpose

- A. The following guidelines apply to North Carolina State University's ("NC State") requirements specific to the needs of NC State. It is the goal of NC State to identify specific needs relevant to working on a public university campus that will help the Contractor gain more knowledge and be fully aware of NC State's expectations while working on campus.
- B. References include the following:
 - 1. NC State University Design and Construction Guidelines – [Division 01 Contractor Safety Guidelines](#)
 - 2. NC State Transportation's Contractor Parking Policies: <http://www2.acs.ncsu.edu/trans/parking/specialty.html>
 - 3. NC State University, Environmental Health and Public Safety, Fire Protection Department Hot Work Permit Procedures. Contractor shall access the following website to obtain hot work permits: http://www.ncsu.edu/ehs/fire/hot_work.htm

2.0 General Requirements

- A. The Owner's Representative - NC State will designate a Project Manager to act as the Owner's Representative in all matters pertaining to construction contracts. All official contacts, decisions, directions, problem resolution, coordination and other liaison activities required from NC State will be through the Project Manager. This requirement does not modify the responsibilities of the Designer as stated in the General Conditions of the Contract.
- B. Contractor, at its expense, shall conduct a background check for each of its employees, as well as for the employees of its subcontractors, who will perform any function or activity under this Agreement. NC State may withhold consent for any of Contractor's employees to be placed on a NC State assignment at its sole discretion.
- C. Behavior policy - All construction personnel shall be respectful of all members of the NC State community. Any incidents of disrespect, verbal abuse, threatening statements, unwelcome comments, unwelcome interaction or any form of harassment from any construction personnel toward any member of NC State community is strictly prohibited. Any such act shall constitute sufficient cause for NC State to remove any individual permanently from the project and all NC State property. In addition, any of the Contractor(s) project personnel who ignore or refuse to take action on any requirements of the contract documents or ignore or refuse to take immediate action to correct any endangerment to the health and safety of the public (as solely determined by NC State)

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shall be permanently removed from the project and NC State property. If in the sole determination of NC State it is in the best interest of the project and NC State to have any of the Contractor(s) personnel removed from the project, then the Contractor shall do so upon request by NC State. Such actions taken by NC State shall not constitute grounds for a delay claim. NC State will not be responsible for any delays caused to the project due to any individual being removed from the project by NC State.

D. Contractor Safety expectations while on this NC State project:

1. Reference **Division 01 – Contractor Safety Requirements** for items identified in this section.
2. Designation of Competent Persons as noted in Section 4.0/C shall be included in the jobsite contact list.
3. Submit a Contractor Site-Specific Safety Plan (SSSP) to the NC State Project Manager (reference Contractor Safety Guidelines 4.0/I).
4. The Safety Representative, as defined by Section 4.0/D must complete, at a minimum, the OSHA Construction Safety Course as defined in Section 4.0/D/1/b.

E. Protection of Work, Property, and Public:

1. The single prime Contractor, Construction Manager at Risk or Project Expediter (on a multi prime project), henceforth referred to as “the Contractor,” shall ensure that campus streets connecting to the project are protected from mud, sand, and stones/gravel. Streets and adjacent property sites shall be kept free from run-off, litter and/or debris in any form from the project site. Mud, litter and/or debris from the construction site that appears on adjacent property sites shall be removed immediately. All mud collected on vehicle tires shall be removed before leaving the construction area. Should any mud or debris from the project site collect on the streets, it shall be removed immediately to prevent any hazards to vehicular or pedestrian traffic as well as from entering the storm sewer system. In any event, all streets and property sites adjacent to the project site shall be cleaned of construction related debris, dust, litter and mud daily. The Contractor, in the preparation of bids, shall account for the daily cleaning of adjacent streets and property sites. The Contractor(s) is prohibited from discharging any waste products from concrete trucks or from concrete coring work, or any other unsuitable materials, fluids or other products on the site or into the storm sewer system. Should the Contractor fail to comply with these requirements, NC State reserves the right, with twenty-four (24) hours prior notice to the Contractor, to clean and or remove mud, trash, litter, debris or any unauthorized discharge from the project site and/or the adjacent streets or properties. In such case, the cost of the cleaning and/or removal or mobilization for cleaning and/or removal shall be deducted from the Contractor's contract.

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2. The Contractor shall repair any damage (including but not limited to: scratches, cuts, dings, holes, track marks, etc.) of any kind made to existing hardscapes (asphalt/concrete roadway and drives, curb and gutter, brick sidewalks, etc.) by heavy equipment or other causes. Repairs shall consist of a complete, full depth removal and replacement of the affected asphalt, concrete or brick hardscapes at the Contractor's expense, or as otherwise determined by the Owner, to include the full width of the road, parking lot, walk or curb that is affected. The Contractor is strongly encouraged to be mindful of this while working around and off-loading equipment in areas of new construction adjacent to existing areas, which are not in the original scope of work to be renovated or repaved. In general, equipment shall be off-loaded inside of assigned staging areas, and the Contractor shall take protective measures as needed, including protective plywood or other means to prevent damage of the hardscape surface. The slightest damage will result in full hardscape replacement at the Contractor's expense.
 3. Blasting on NC State property is prohibited.
 4. Each Contractor doing excavation work is responsible for locating all existing underground utilities prior to commencing excavation. The Contractor shall be responsible for the associated cost of any utility interruption and repair due to his excavation if utility location was not requested, location procedures performed and followed prior to commencing excavation. The Contractor shall immediately notify NC State and restore the service of any utility disrupted due to excavation or any Contractor action whatever the circumstance. NC State reserves the right to immediately restore the service of any utility disrupted due to actions of the Contractor and deduct the cost of such restoration from the Contractor's contract.
 5. For emergency situations during construction, the Contractor shall furnish NC State with the names, pager numbers, and telephone numbers (day and night) of the Contractor's project manager and superintendent prior to beginning work. The numbers shall remain current or be updated as required for the duration of the project. The Contractor shall contact NC State via cell phone immediately in the event of an emergency. NC State will only provide security, as it deems prudent and necessary for its own protection. The Contractor shall be responsible for the security and safety of the project within the project limits. NC State must approve any "watchman" service instituted by the Contractor.
 6. NC State will conduct normal operations during the duration of the project. The Contractor shall coordinate with NC State to minimize any disruptions to the functions of NC State.
- F. Working Hours - The Contractor may establish a work schedule of his own choosing. The Contractor shall submit to NC State and to the Designer his regular daily work

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schedule and shall notify NC State in writing one week in advance of any deviations from the schedule. There are no restrictions regarding work hours. NC State reserves the right to limit the Contractor's activities when they conflict with NC State operations. These operations include but are not limited to the following: examination periods (typically for two weeks in December and two weeks in May), graduation (typically for one weekend in December and May), athletic events, and student move in/move out days. During these times, the Contractor may be required to cease all construction activities, limit activities to on-site only, modify working hours or restrict noise-making activities as determined by NC State.

- G. Contractor Daily Reports - The Contractor shall keep construction daily reports and provide, at NC State's request or on a minimum weekly basis, copies of these daily reports. The Contractor shall either use the company's standard daily report or use a template provided by NC State. The daily report shall at a minimum include the following information:
1. Project name, SCO Project ID#, NC State Project #
 2. Report #
 3. Date and time report was generated
 4. Weather data: overhead conditions, precipitation (if so, how much), temperature (high and low), impact on progress
 5. Document Daily Safety Briefing (refer to Contractor Safety Guidelines 4.0/E)
 6. Report Daily Safety Inspections (refer to Contractor Safety Guidelines 4.0/F)
 7. Sediment and erosion control
 8. Work performed (include all major trades)
 9. Number of workers on site
 10. Major equipment deliveries
 11. Major equipment working on site
 12. Difficulties encountered that may cause delay
 13. Days of no work and reason
- H. Meetings - The contractor shall at a minimum conduct weekly coordination meeting to review construction progress and any issues that need to be resolved. Contractor shall invite NC State and Designer as well as any required subcontractors.
- I. Inspection of the work - NC State will conduct the following inspections, as applicable, which shall be included in the construction schedule: in-wall inspections, above ceiling inspections, generator test, fire pump test, fire sprinkler main drain tests, pre-final inspections, 100% test of the fire detection and alarm system, third-party materials testing/special inspections/commissioning and a final inspection for project acceptance. Any inspections that are not satisfactory shall be repeated at no cost to NC State and shall

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not be cause for a time extension. All inspections will be conducted by NC State at the same time as the Designer's inspection and a punch list generated. The Contractor shall give the Designer and NC State a minimum of fourteen (14) calendar days prior notice that the systems have been verified by the Contractor to be complete, fully functional and ready for inspection. The following general guidelines apply to the above ceiling inspections:

1. The systems must be complete, including but not limited to controls, insulation, labeling, tagging, fireproofing, fire stopping, wiring, light fixtures installed, and all piping in place.
2. Ceiling grid may be installed as required, framing for hard ceilings shall be in place, and access door locations shall be framed and noted.

Under no circumstance shall any ceiling or wall area be covered prior to the above ceiling inspection. All punch list items generated from the inspections shall be completed by the Contractor and verified by the Designer and NC State. Any re-inspection costs, including but not limited to Designer, NC State, State Construction Office (SCO) or third party personnel, that result from punch list items not being 100% complete shall be at the expense of the Contractor.

- J. Use of the Premises - Parking is extremely limited at NC State. Parking for personal vehicles on campus is not provided. Contractors must limit parking of company vehicles and storage of materials to within the limits of the construction site and staging area. The Contractor is required to follow NC State Transportation's Contractor Parking Policies (see web link on page one of this document).
- K. Utilities - It is imperative that all campus utilities and all other campus services are maintained at all times except for scheduled interruptions. Required utility interruptions shall be scheduled with and requested through NC State at least fourteen (14) days in advance for minor outages and thirty (30) days in advance for major outages. NC State is the sole determiner of the utility outage being major or minor. Major outages include but are not limited to those that affect an entire floor of a building, all of a building, all or parts of several buildings, all or parts of an area, and any high voltage outage. No utility interruption, regardless of the advance notice given, shall be undertaken without expressed, specific approval from NC State. If requested by NC State, utility outages shall be performed after hours and/or at night, or over the weekend, or during holidays. No extra payment will be made for such work. NC State personnel will perform certain activities in connection with utility outages such as operating existing electrical switches, turning existing water and steam valves, placing existing building systems back in operation, operating existing fire alarm systems, etc. NC State will bear the expense of the work of their personnel. When the Contractor requires an additional or extra outage to complete their work because of a shortage of or improper materials, shortage of labor, poor coordination, failure to finish the work during the outage scheduled length of time, the Contractor will pay all expenses incurred for NC State's services for an additional

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outage(s). No service disruptions shall take place until barricades (if applicable) and signs are in place to notify and/or protect the public. Barricades must be maintained at all times and signs shall be neat and legible, hand-made signs are not acceptable. Signs for utility outage notice shall be written and placed as directed by NC State seven (7) workdays prior to the outage. NC State may determine the utility service cannot be interrupted for the length of time or frequency requested by the Contractor. In such case the Contractor shall include in his bid provisions for temporary utility services for the duration of the outage at no cost to NC State.

- L. Survey of New and Existing Sub-surface Utilities - Perform field location surveys of new utilities installed as well as existing utilities uncovered during the construction phase. Conventional survey standards are to be utilized during the collection of field data. All work shall be performed by qualified personnel under the supervision of a Professional Land Surveyor. Accuracy Standards: horizontal and vertical location shall be +/- 0.25'. Survey (NAD83-North Carolina State Plane Coordinates) shall tie to NC State's horizontal & vertical control monuments.

1. Utility Drawing Set (Hard Copy)

- a) Cover Sheet - All projects require a cover sheet with the following information -
 - (1) NC State Project Name
 - (2) NC State Project Number
 - (3) NC State Building Name (s)
 - (4) NC State Building Number or Utility Zone Number (s)
 - (5) Project Phase (i.e. Schematic Design, Design Development, 100% Bid Documents, or Record Set)
 - (6) Sheet Name with discipline letter preceding sheet number (i.e. A100 for an Architectural Plan).
 - (7) Drawing Index
 - (8) Site Map
 - (9) For interior renovations, a hatched key plan indicating the extent of work
- b) Drawing Sizes – sheet sizes shall not exceed 36" x 48" and shall not be less than 24" x 36" in size.
- c) Include licensing seal and certification on 100% bid documents and record set documents.

2. Utility Drawing Set (Electronic Copy)

- a) Format shall be .pdf.
- b) Submission is required at each project phase.
- c) File naming shall be as follows:

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- (1) Typical file naming shall be as follows -
bldg #_ncsu project number_date_phase.pdf or
utility zone #_ncsu project number_date_phase.pdf
 - (2) Example: 799Z_201300001_10-31-12_sd.pdf
 - (3) For projects with multiple buildings or utility zones, the lowest number shall be used in file name.
3. Electronic Source CADD Files (Record Set and first Construction Document Submittal)
 - a) Electronic files of all drawings shall include source drawings, font libraries, custom line styles/codes, plot style tables and other digital CADD related information.
 - b) The files shall be in AutoCAD .dwg format; the AutoCAD version shall be within the last 2 years of the current release.
 - c) Drawings shall be drawn at a scale of 1 to 1 in model space. Interior spaces shall be in Architectural inches. Exterior space shall be in US survey foot.
 - d) For exterior projects use NAD 83 North Carolina State plane coordinates.
 - e) All external references shall be bound as inserts or inserted directly as a block into the drawing. X-refs of any kind are not acceptable.
 - f) Remove licensing seals from drawing files.
 - g) Drawings shall be purged and audited.
 - h) Submission shall not include backup .bak files or .zip files.
 - i) Site, Civil, and Survey drawings shall use the NC State mapping drawing template, which includes NC State standard layers, linetypes and block symbols. The current version can be downloaded at www.ncsu.edu/facilities/con_guidelines/NCSU_CIV-SRV_TEMPLATE.dwg
4. Utility Submission
 - a) Hard Copy - The Drawing Set shall be submitted on bond paper.
 - b) Electronic Files for the Record Drawing Set and Source CADD Files shall be accompanied by a transmittal with a listing of the included documents and the following information:
 - (1) NC State Project Number
 - (2) NC State Project Name
 - (3) NC State Building Number(s)
 - (4) NC State Building Name (s)
 - (5) NC State Project Manager's Name and Phone Number

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- (6) Submitting Professional's Name and Address
 - c) Electronic Files shall be submitted on a CD or DVD
 - (1) A .pdf file of the transmittal shall be included on each disk.
- M. The following outline lists the utilities to be located and the data to be collected. Photographs shall be at a minimum resolution of 2200 x 1700. Digital photographs can be submitted in TIFF, JPG, or RAW file formats. File naming shall be all lower case text. File naming shall be as follows: bldg#_ncsu project number_util_photo#.file extension. For example: 135_201300001_util_1.jpg
 - 1. Steam Tunnel and Lines
 - a) Location and elevations of the tunnel slab and top of tunnel centerlines.
 - b) Location and size of steam and condensation pipes in the tunnel, including changes in directions, expansion loops and anchors.
 - c) Top of pipe of any direct buried steam and condensation pipes, including changes in directions, expansion loops and anchors.
 - d) List the construction material for the tunnels.
 - e) Provide digital photographs of the tunnel, piping and expansions areas.
 - 2. Water Lines - (Domestic, Fire Main, Chilled, Hot Water, & Reuse Waterlines)
 - a) Locations, size and elevations at the top of installed water lines, including changes in direction.
 - b) Locations of valves and a valve type designation, meters, fire department connections, post indicator valves, hydrants, reducers, manholes, and backflow device.
 - c) Provide digital photographs of bends and valves.
 - 3. Electric and Communication Duct Banks and Direct Buried Conduit
 - a) Location and elevations of the duct bank top and bottom.
 - b) Location and elevations of conduit runs in the duct bank.
 - c) Location and elevations of any direct buried conduit or concrete duct bank.
 - d) Location and elevations of manhole rims, transformers, pedestals, switches, poles, overhead lines, junction boxes, panels, generators, and meter boxes.
 - e) Provide digital photographs of the tunnel and conduit configuration.
 - 4. Gas
 - a) Location and elevations of top of pipe and any change in direction.
 - b) Location and elevations of meters, pressure reducing stations, test stations, generators, and valves.

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5. Storm and Sanitary Sewer
 - a) Provide invert elevations for incoming and outgoing piping at manholes.
 - b) Provide top elevation of manhole cover.
 - c) Note if manhole rims are in the center of the structure or not. Measure the offset, pipe sizes, material types and the direction of the flow.
 - d) Provide digital photographs of structures.
 6. Existing Utilities
 - a) Locate and provide elevations consistent with new utility requirements of any existing utilities exposed during excavation of trenches for new utilities.
 - b) Provide digital photographs of the crossing or conflict.
 7. Deliverables for Surveys
 - a) The subsurface location data and platting shall be continuous throughout the project.
 - b) All data and plats are due to NC State within two-weeks of the backfilling of utilities or completion of the associated construction task.
- N. Traffic Movement and Interruptions - Road and sidewalk blockages shall be scheduled fourteen (14) days in advance and made only after NC State has approved them. Appropriate detours shall be planned, subject to approval by NC State, giving consideration to the handicapped access. No excavations shall take place prior to placing proper barricades, lighting, and other devices as shall be required. The Contractor shall install warning signs, barricades and detour information signs to maintain traffic flow as directed by NC State. If required, flagmen shall direct traffic around the construction area or detour area. Contractors are reminded of the presence on campus of handicapped students, staff and faculty. All barricades, temporary walkways, excavations, and stockpiled materials shall be placed and/or constructed in such a manner as to accommodate, adequately warn, and protect this segment of the campus population. The Contractor shall make requests for approval for any street, alley, driveway or any access way to be closed at least fourteen (14) work days prior to the date for the desired closing. The Contractor shall close no street, alley, driveway or access-way without prior approval by NC State. Pedestrian and vehicle traffic way-finding around the construction limits must be maintained in a clean and safe condition at all times.
- O. Fire Alarm Shutdowns - When requesting fire alarm shutdowns to support construction activities, the contractor shall provide advanced notice as determined by the NC State Project Manager. The contractor shall also be required to reimburse NC State for all costs associated with the fire alarm shutdown as follows:
1. During normal business hours (Monday – Friday, 7:00 AM – 5:00 PM): \$75.00 per disconnect and \$75.00 per reconnect for a total of \$150.00.

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2. After normal working hours (Monday – Friday, 5:01 PM – 6:59 AM; Saturday – Sunday): \$150.00 per disconnect and \$150.00 per reconnect for a total of \$300.00.
 3. If at any time the fire alarm system is not in operation after normal working hours then the contractor shall be required to employ a Fire Watch for the unprotected portion of the building, using NC State Fire Marshal's approved Fire Watch company (hourly rates vary but should not exceed \$35.00 per hour.)
- P. Hot Work Permits - When the Contractor is performing work that produces heat, flame, or sparks on or in an existing building or other structure the Contractor is required to obtain a "hot work" permit from NC State Environmental Health and Public Safety, Fire Protection Department. The department's requirements for the hot work program and permit can be found at the web link on the first page of this document.
- Q. Cleanliness and Site Maintenance - The Contractor(s) shall be responsible for keeping the project limits area, the project site, and the project itself clean and free of accumulated construction debris and trash. To that extent, the Contractor(s) shall be responsible for cleaning their work areas weekly at a minimum and the proper disposal of their construction debris and trash. The construction site and staging areas shall be cleaned as previously noted; however, should trash, litter or debris from the project site migrate to any adjacent campus areas it shall be removed immediately. Grass in the construction site shall be mowed as often as required to maintain a neat appearance or as requested by NC State but in no case less than once per month. Should the Contractor(s), in the sole judgment of NC State fail to comply with these requirements, then NC State reserves the right to proceed with cleaning within the project limits area, immediate project site, the interior of the project or, if applicable, the adjacent areas to the project as it deems necessary. The cost of the cleaning and/or the mobilization cost of cleaning will be deducted from the Contractor(s) contract.
- R. Storage of construction materials and equipment - Storage of construction materials and equipment shall be limited to the staging area. Should the Contractor fail to remove any material stored or equipment outside the staging area within twenty-four (24) hours of notification received from NC State, NC State shall have the right to remove and dispose of such materials from the campus. NC State will deduct the cost of such removal and disposal from the Contractor(s) contract. The offending Contractor(s) shall be responsible for any delay to the project resulting from NC State having to remove and dispose of such materials or equipment.
- S. Construction site - A construction fence shall be installed around the perimeter of the project limits. The fence shall be constructed of heavy-duty chain link material, have a minimum height of six feet and shall have a continuous top tubular rail. Swing gates shall be included at every access to the enclosed area. The fence shall have an integral visual barrier or shall have shading type material applied and maintained for the duration of the

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project. Locks for the gates shall be interlocked with a padlock provided by NC State in order to allow access by NC State or other emergency personnel in case of an emergency.

- T. Inspection and Audit - Contractor's "records" shall upon reasonable notice be open to inspection and subject to audit and/or reproduction during normal business working hours. An NC State representative or an outside representative engaged by NC State may perform such audits. NC State or its designee may conduct such audits or inspections throughout the term of this contract and for a period of three years after final payment or longer if required by law.
1. Contractor's records as referred to in this contract shall include any and all information, materials and data of every kind and character, including without limitation, records, books, documents, subscriptions, recordings, agreements, purchase orders, leases, contracts, commitments, arrangements, notes, daily diaries, superintendent reports, drawings, receipts, vouchers and memoranda, and any and all other agreements, sources of information and matters that may in NC State's judgment have any bearing on or pertain to any matters, rights, duties or obligations under or covered by any Contract Document. Such records shall include (hard copy, as well as computer readable data if it can be made available): written policies and procedures; time sheets; payroll registers; payroll records; cancelled payroll checks; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.); original estimates; estimating work sheets; correspondence; change order files (including documentation covering negotiated settlements); back charge logs and supporting documentation; invoices and related payment documentation; general ledger entries detailing cash and trade discounts earned; insurance rebates and dividends; and any other Contractor records which may have a bearing on matters of interest to NC State in connection with the Contractor's dealings with NC State (all foregoing hereinafter referred to as "records") to the extent necessary to adequately permit evaluation and verification of:
 - a) Contractor compliance with contract requirements,
 - b) Compliance with NC State's business ethics policies, and
 - c) Compliance with provisions for pricing change orders, invoices or claims submitted by the Contractor or any of his payees.
- U. Changes in the Work - Overhead shall also include all general conditions of the contract and all general requirements such as project management, scheduling, home office expense, engineering and layout, reproduction expenses, shop drawing processing and coordination, supervision, coordination, small tools, all vehicle expenses, temporary facilities, safety provisions, as built drawings, estimating, and general overhead.
1. The change order cost break down shall include: labor (number of hours and \$/hr) and material (quantity and \$/unit), including such breakdowns for work

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performed by the general contractor and all subcontractors. Unit prices shall only be allowed as stipulated in Article 19 of the contract General Conditions. Cost extensions shall be clearly shown for the labor and material prior to any mark-ups. The cost extensions shall be added into a labor and material subtotal. The labor shall then show a percentage for labor burden, while the materials shall show the applicable sales tax. These subtotals shall then be shown as a total for labor and material costs. The labor and material cost shall then show the allowed mark-up, and a final total. Subcontractor quotes shall be presented in the same format on the subcontractor's letterhead. Each item totaled on the Contractor's summary sheet shall be separated in the back up documentation by a colored sheet of paper. For change orders that delete any part of the work within the change order and/or contain deductive costs, the back up shall show the original material and labor for the deleted work or costs. If the change order contains both adds and deducts for the same type of work then the material unit and labor unit costs shown on the back up for the deleted work and the added work shall be the same and the net difference shown. Deductive change orders shall show the proper reduction in OH&P and the bond. The Contractor shall also provide HUB utilization information on NC State's Hub Utilization form. Failure by the Contractor to provide the information requested in this paragraph shall result in rejection of the change order by the designer and a request for re-submittal. Delay in the processing of the change order due to lack of proper submittal by the Contractor in accordance with this paragraph, or due to errors in the change order calculations shall not constitute grounds for a time extension or basis for a claim.

2. For all proposed 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 and as required in General Condition Article 19 – Changes in the Work, paragraph “c”, “d”, and “e”. The designer shall verify correctness and determine that the Contractor's proposed costs are equitable. After receipt of the Contractor's proposal and if the proposal is correct and it is agreed to by the designer and NC State that the cost is equitable then NC State shall prepare a change order and forward it to the Contractor for his signature. If the change order proposal is incorrect, or the cost has not been agreed upon by the designer and NC State then the designer shall notify the Contractor that the proposal is rejected and the proposal shall be re-submitted. If the proposal is rejected because the cost are deemed not to be equitable then the contracting parties shall negotiate and agree upon the equitable value of the change and the proposal shall be resubmitted with costs determined under General Condition Article 19 – Changes in the Work Paragraph “e”.
3. Once proposed change orders have been reviewed and approved by the Contractor, Designer and NC State, the change order shall be processed for

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signatures electronically through the State Construction Office (SCO) web-based Interscope program. Directions for using Interscope shall be provided at the Pre-construction Conference.

4. If for whatever reason Interscope cannot be used for processing change orders, change orders shall be processed in hard copy format in accordance with General Condition Article 19 – Changes in the Work. The change order shall contain a brief description of the work on the 1st page of the SCO form and again on the second sheet of the form under “DESCRIPTION OF CHANGE”. On the second sheet there shall also be a brief description of the reason for the change along with a cause code listed. Each item totaled on the Contractor's summary sheet shall be separated in the back up documentation by a colored sheet of paper. 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 NC State for signature. NC State shall execute the change order and forward to the State Construction Office for final approval. The State Construction Office shall review and upon approval execute the change order and keep one copy. The remaining copies are sent to the designer for distribution to NC State (two copies with original signatures) and to the Contractor (two copies). The Contractor shall forward a copy to his Surety. In the case of an emergency or extenuating circumstances, the approval of the changes may be obtained verbally by telephone or field order approved by all parties.
 5. The Contractor shall also provide HUB utilization information on NC State's Hub Utilization form.
 6. Failure by the Contractor to provide the information requested in this paragraph shall result in rejection of the change order by the designer and a request for re-submittal. Delay in the processing of the change order due to lack of proper submittal by the Contractor in accordance with this paragraph or due to errors in the change order calculations shall not constitute grounds for a time extension or basis for a claim.
- V. A time extension due to Weather - A rain day is defined as any day that rain exceeds one tenth of one inch (0.1"). The Contractor may only be entitled to extension of the contract period for the number of rain days that exceed the normal number of rain days for any given month. For the purpose of determining extent of delay attributable to unusual weather, a determination shall be made by comparing the weather for the contract period with the preceding five (5) year climatic range average during the same time interval based on statistics kept at NC State's Marine, Earth and Atmospheric Sciences department located on NC State's campus and on daily weather logs kept on the jobsite by the Contractor, reflecting the effect of the weather on progress of the work and initialed by the designer's representative. Time extensions for weather delays do not entitle the Contractor to “extended overhead” recovery and are in all other ways non-compensable.

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Notwithstanding the immediately preceding paragraph, not all rain days above the normal number of rain days will warrant a contract time extension. Justification for the request for rain related contract time extensions must also be based on the effect of the rain on critical path work activity in progress during the period of the request and additionally be predicated on the Contractor's diligent prosecution of the work. No additional rain days shall be granted for building projects after the building has been "dried-in" as determined by the designer. The contract time extension request must incorporate work logs kept at the jobsite by the project superintendent showing the effect of the weather on the progress of the critical path work and the critical path schedule, both initialed by the designer's project representative.

Requests for contract time extensions based on rain days must be received by the designer on or before the 20th day of the month immediately following the month in which the rain occurred. The request must include all required documentation. All parties to this contract agree that the Contractor has no right to claim a contract time extension if the request is not received by the designer in strict accordance with the procedure set forth in this paragraph.

For other types of weather delays, the Contractor is granted one (1) day of contract extension for each day NC State is closed due to weather.

W. Final Inspection and Acceptance

1. In addition to all other contract inspection requirements, the following items shall be completed prior to scheduling a final inspection:
 - a) Training of NC State's Facilities Operations personnel shall be conducted with approved Operation and Maintenance Manuals (O&M's) provided at the training sessions.
 - b) Deliver to NC State one copy of all approved shop drawings (submittals) for the project.
 - c) Stairs: prior to final inspection, the Contractor shall submit to the Designer and NC State for review and approval as-built survey drawings of each set of stairs (exterior and interior) constructed as part of this contract. As-built survey drawings shall include dimensions of each riser and each tread and shall bear the seal of a licensed surveyor registered in the State of North Carolina. The Designer shall determine that the stairs are in full compliance with the current State of North Carolina Building Code, and if not in compliance, the Contractor, at his expense, shall make all required corrections, resurvey and resubmit as-builts for re-review and approval by the Designer and NC State.
2. The Contractor shall complete the following list, indicating the date of completion, prior to scheduling a final inspection and recommending acceptance of the project to NCSU. Items 1 and 2 must be completed prior to "substantial

NC State University Design and Construction Guidelines

Division 01 NC State's Requirements

completion” as defined in Supplementary General Conditions 3.0 Article 23
“Time of completion - the Contractor shall coordinate with NC State the
completion of some items on the list as required:

NC State University Design and Construction Guidelines

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Project Acceptance Checklist (also to be used for Beneficial Occupancy when applicable)

Project Name:

Code: **Item:**

Note: All items must be checked off with dates & initialed

accordingly

I. Pre-final Inspections	Initial & Date
A. Critical Items Check List:	
1. NCSU Environmental Health Safety Department certification of fume hoods	
2. NCSU Fire Marshall's inspection of life safety systems (FAS, Sprinkler System, Emergency Generator, Fire Pumps etc)	
3. Fire Extinguishers installed or delivered to NC State	
4. Roof & window water tests (when required)	
5. Date to coordinate NCSU Fac Ops Lock Shop to install locks and test in conjunction with Life Safety	
6. State Construction Office electrical inspection(s) complete	
7. Fire alarm inspection and certification by installer and design engineer complete	
8. Fire alarm inspected & approved by NCSU Electronics Shop & Fire Marshall	
9. Elevator inspection by Dept. of Labor, approval to operate the elevator obtained	
10. Demonstration of operation of fire pumps to NCSU Fire Marshall	
11. Operation of emergency and stand by power circuits verified	
12. Operation of emergency generator verified	
13. Dept. of Health water test results and approvals delivered to designer	
14. Dept. of Labor pressure vessel inspections and certificates issued and displayed.	
15. Endorsement of surety for beneficial occupancy (if applicable)	
16. Endorsement of Contractor's insurance company for beneficial occupancy (if applicable)	
17. Approval of SCO for beneficial occupancy (if applicable)	
18. Date for insurance transfers established	
II. Training and instruction of Facility Operations Personnel on Equipment	
A. Record of Instruction Sessions:	
Plumbing	
HVAC/ Controls	
Electrical	
Fire Alarm	
B. NC State O & M Manuals and pressure vessels info delivered to NC State	
III. Pre-Final Inspection	
A. Pre-final Punch list Certified as Complete by the Designer:	
General	
Mechanical	
Plumbing	
Electrical (including fire alarm system)	
IV. Final Inspections with SCO	
A. Date of Final Acceptance Inspection with SCO	
1. Date SCO punch list items complete	

All items complete and verified by the Designer

Signed _____ **Date:** _____

NC State University Design and Construction Guidelines

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- X. Request for Payment – In addition to General Conditions Article 31 – Requests for Payments, Contractor payment applications shall have the following information clearly shown on the front page: NC State project number, Code & Item, State Construction Office Project Identification Number. No payment may be made for stored materials that are not stored within the project limits or on property owned by the State of North Carolina. Exception may be considered for material stored in a third-party, bonded warehouse with all appropriate documentation provided to NC State. Designer must verify that material is stored in a bonded warehouse and that the stored material is identified as NC State property. No payment shall be certified/approved by the Designer and forwarded to NC State for payment if not accompanied by the following:
1. A letter from the surety company consenting to the progress payment in the amount requested. The amount of the payment shall be shown on the letter.
 2. A completed sales tax statement and form.
 3. An updated CPM schedule.
 4. MBE Appendix "E" Form with accurate subcontract amounts and amounts paid.
 5. NC State project code, item number, project number and the State Construction Office ID number on the 1st sheet.
 6. Pay applications without the information listed shown shall be considered incomplete and cannot be approved.
 7. "Schedule of values" shall include payment line items for various commissioning activities.

No final payment shall be approved by the Designer and/or forwarded to NC State if not accompanied by the following:

8. Certificate of Compliance signed by the Designer of Record.
9. Certificate of Completion signed by the Designer of Record.
10. Completed Tax Statement and Form.
11. Consent of Surety for Final Payment.
12. Contractor's Affidavit of Payment of Debts and Claims.
13. Contractor's Affidavit for Release of Liens.
14. Contractor's General Guarantee.
15. Contractor's statement of any special or extended warranties.
16. MBE Appendix "E" Form with accurate subcontract amounts and amounts paid.

* NC State shall have 30 days from the time that correct and complete payment requests are received to pay the Contractor.



MATRIX

Health & Safety Consultants, L.L.C.

September 8, 2021

Capital Project Management
NC State University
Campus Box 7520
Raleigh, NC 27695-7520

Attention: David Hammock, PE, LEED AP BD+C

Subject: Limited Survey for the Presence of Asbestos-Containing
and Lead-Based Paints
Brooks Hall – HVAC Renovation Project
North Carolina State University
Raleigh, North Carolina
Matrix Job Number: 210912

Dear Mr. Hammock:

Matrix Health & Safety Consultants, L.L.C. (Matrix) is pleased to present this report of the limited survey to identify the presence of asbestos-containing materials and lead-based paints at the referenced project site. This report includes a description of the scope of services performed and results of the survey.

PROJECT INFORMATION

Matrix understands that HVAC upgrades are scheduled for Brooks Hall in the near future. As part of the project, existing HVAC units and ductwork are scheduled for removal and replacement. In order to facilitate the scheduled upgrades, Matrix performed a limited survey to determine the existence of asbestos-containing materials and lead-based paints. The building was occupied at the time of the inspection. Per client instruction, all efforts were made to minimize damage of building materials while taking samples and collect samples only in areas where renovation activities are scheduled, as directed by the client. Matrix recommends that materials not included in the scope of this limited inspection be tested for asbestos prior to future renovation or demolition activities, which may disturb them.

SURVEY PROCEDURES

The survey was completed on August 23, 2021 by Matrix inspector Gregg E. Heppert (NC Asbestos Inspector No. 11702, NC Lead Risk Assessor 120151). The survey began with a visual inspection of the renovation areas on the second and third floor of Brooks Hall for the presence of

suspect asbestos-containing materials (ACM) and lead-based paints (LBP). Both friable and nonfriable suspect asbestos-containing materials were considered during the course of the survey.

Friable materials are those materials that can be pulverized or reduced to powder by hand pressure. A sampling strategy was determined and bulk samples of suspect ACM's were obtained. Suspect ACM's were grouped based on material homogeneity. A homogeneous area is an area which contains materials that seem by texture, color and wear to be uniform and applied during the same general time period.

In order to determine if the suspect materials documented during the survey contained asbestos, the materials were sampled and delivered to CEI/Eurofins in Cary, NC for laboratory analysis. Each sample obtained was placed in a sealed container and labeled with a consecutive number, location and date. This information was logged on our Asbestos Bulk Sampling Record sheet and then sent to the laboratory. A signed chain-of-custody form is maintained with the samples until they are returned or disposed of.

ASBESTOS ANALYSIS PROCEDURES

The collected asbestos samples were analyzed using Polarized Light Microscopy (PLM) in conjunction with dispersion staining techniques using EPA Method 600/R-93/116. The bulk laboratory analysis provided the asbestos content (positive or negative), percentage of asbestos, asbestos type and identification of other non-asbestos fibers. A material is considered by the EPA to be asbestos-containing if asbestos is present in a quantity **greater than one percent (1%)**. The results of the laboratory analysis are presented in the attached Laboratory Analytical Reports.

ASBESTOS SURVEY RESULTS

Asbestos was detected in the ceiling texture located throughout the building (2% Chrysotile and in black floor tile and mastic located throughout the second and third floor (Tile: 3% Chrysotile and Mastic: 7% Chrysotile). Floor tile and mastic is also located beneath carpeting in the target area.

The National Emissions Standard for Hazardous Air Pollutants (NESHAP) requires the removal of asbestos-containing materials prior to renovation or demolition activities, if the material will be disturbed through the renovation process. Matrix recommends asbestos removal be performed by a qualified asbestos abatement contractor, using North Carolina accredited personnel, in accordance with applicable federal and state regulations governing the removal of asbestos-containing materials.

OSHA regards materials with any amount of asbestos to be a potential exposure hazard if the material is disturbed. Therefore, work practices specified in the OSHA Standard (CFR 29 1926.1101) must be followed if the materials are disturbed, removed or demolished. Proper training, hazard communication and personal protection measures are also required as specified in the OSHA Standards.

Asbestos was **not** detected in the underlying plaster, drywall and patch compound, block sealant or vibration dampers collected from the second and third floors.

LEAD-BASED PAINT SURVEY PROCEDURES

The lead-based paint survey began with our inspector/risk assessor walking the subject renovation areas and documenting testing combinations and selecting test locations. The walls/sides of the property are distinguished by Side A, B, C, or D. Wall or side A at Brooks Hall is considered the Stinson Dr. side of the building, then moving clockwise would be wall/side B, C, or D. After the testing strategy was determined, Matrix used a Viken Pb200i X-Ray Fluorescent Paint Spectrum Analyzer (XRF) to determine the lead content (mg/cm²) of painted surfaces at the subject property. For the purpose of this survey, paints with concentrations of 1.0 mg/cm² or greater were considered lead-based paint.

Below you will find the chart showing that lead concentrations for painted components tested were below 1.0 mg/cm² of lead, except unpainted vinyl flooring. Detectable lead quantities less than 1.0 mg/cm² may still constitute a lead dust hazard even though it is not a lead-based paint as defined by Federal Standards. For a list of all surfaces tested and XRF results, refer to the attached XRF Testing Report.

Brooks Hall

COMPONENT	SUBSTRATE	COLOR	LOCATION	LEAD CONTENT (mg/cm ²)	CONDITION
Floor Tile	Vinyl	Black	Second and Third Floors	1.2	Intact
Baseboard	Wood	White	Second and Third Floors	0.2 to 0.4	Intact
Ceiling	Plaster	White	Second and Third Floors	0.1 to 0.2	Intact
Ductwork	Metal	White	Second and Third Floors	0.1	Intact
Walls	Cinderblock and Drywall	White	Second and Third Floors	0.1 to 0.2	Intact

Personnel performing renovation or demolition activities that may disturb the painted surfaces that contain **any** quantity of lead should comply with all current OSHA regulations (**OSHA Lead in Construction Standard 29 CFR 1926.62**) in order to minimize employee exposure to lead.

The Occupational Safety and Health Administration (OSHA) Lead in Construction Standard states that “negative” readings (i.e. those below the HUD/EPA definition of what constitutes

LBP [1.0 mg/cm²] **does not** relieve contractors from performing exposure assessments (personal air monitoring) on their employees per the OSHA Lead Standard, and should not be interpreted as lead free. Although a reading may indicate “negative”, airborne lead concentrations still may exceed the OSHA Action Level or the OSHA Permissible exposure limit (PEL) depending on the work activity.

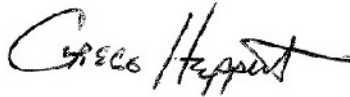
QUALIFICATIONS

This report summarizes Matrix’s evaluation of the conditions observed at the subject property during the course of the survey to identify asbestos and lead-based paints. Our findings are based upon our observations at the facility and XRF testing asbestos sampling performed at the time of this survey. Additional lead-based paints and/or asbestos may exist in other portions of the facility but were undetected due to inaccessibility, imperceptible change, or limited scope of work. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation. This survey was not performed in order to meet requirements for lead-based paint inspections for target housing or child occupied facilities.

Matrix appreciates the opportunity to have provided these services. We would be glad to discuss any of the results contained in this report, at your convenience. If there are any questions concerning this report or results, please contact us.

Sincerely,

MATRIX HEALTH AND SAFETY CONSULTANTS, L.L.C.



Gregg E. Heppert
Project Principal

Attachments: Laboratory Analysis Report
 XRF Testing Data



Example of Asbestos-Containing Ceiling Texture

Laboratory Analysis Reports and XRF Testing Data

August 24, 2021

Matrix Health & Safety Consultants
2900 Yonkers Road
Raleigh, NC 27604

CLIENT PROJECT: Brooks Hall NCSU, HVAC
CEI LAB CODE: A2112979

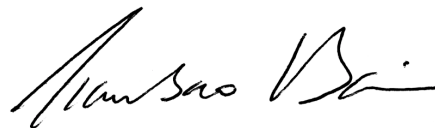
Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on August 23, 2021. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,



Tianbao Bai, Ph.D., CIH
Laboratory Director

ASBESTOS ANALYTICAL REPORT

By: Polarized Light Microscopy

Prepared for

Matrix Health & Safety Consultants

CLIENT PROJECT: Brooks Hall NCSU, HVAC

LAB CODE: A2112979

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 08/24/21

TOTAL SAMPLES ANALYZED: 14

SAMPLES >1% ASBESTOS: 3

Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: Brooks Hall NCSU, HVAC

LAB CODE: A2112979

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
BH-1		A184066	White	Ceiling Texture	Chrysotile 2%
BH-2		A184067		Sample Not Analyzed per COC	
BH-3		A184068		Sample Not Analyzed per COC	
BH-4	Layer 1	A184069	White,Gray	Plaster Skim Coat	None Detected
	Layer 2	A184069	Gray	Plaster Base Coat	None Detected
BH-5		A184070	Gray	Plaster Base Coat	None Detected
BH-6		A184071	White,Gray	Plaster	None Detected
BH-7		A184072A	Black,White	Floor Tile	Chrysotile 3%
		A184072B	Black	Mastic	Chrysotile 7%
BH-8		A184073		Sample Not Analyzed per COC	
BH-9		A184074	White,Black	Vibration Dampener	None Detected
BH-10		A184075	White,Black	Vibration Dampener	None Detected
BH-11		A184076	White,Tan	Block Sealant	None Detected
BH-12		A184077	White,Tan	Block Sealant	None Detected
BH-13		A184078	White,Tan	Block Sealant	None Detected
BH-14		A184079	Yellow	Carpet Mastic	None Detected
BH-15		A184080	Yellow	Carpet Mastic	None Detected
BH-16		A184081	Gray,White	Drywall/patch	None Detected
BH-17		A184082	Gray,White	Drywall/patch	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Matrix Health & Safety Consultants
2900 Yonkers Road
Raleigh, NC 27604

Lab Code: A2112979
Date Received: 08-23-21
Date Analyzed: 08-24-21
Date Reported: 08-24-21

Project: Brooks Hall NCSU, HVAC

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
BH-1 A184066	Ceiling Texture	Heterogeneous White Fibrous Loose	3%	Cellulose	60% 35% <1%	Binder Perlite Paint	2% Chrysotile
BH-2 A184067	Sample Not Analyzed per COC						
BH-3 A184068	Sample Not Analyzed per COC						
BH-4 Layer 1 A184069	Plaster Skim Coat	Heterogeneous White, Gray Non-fibrous Bound			75% 25% <1%	Binder Perlite Paint	None Detected
Layer 2 A184069	Plaster Base Coat	Heterogeneous Gray Non-fibrous Tightly Bound			65% 35%	Silicates Binder	None Detected
BH-5 A184070	Plaster Base Coat	Heterogeneous Gray Fibrous Tightly Bound	<1%	Cellulose	65% 35% <1%	Silicates Binder Paint	None Detected
BH-6 A184071	Plaster	Heterogeneous White, Gray Non-fibrous Bound			75% 25% <1%	Binder Perlite Paint	None Detected
BH-7 A184072A	Floor Tile	Homogeneous Black, White Non-fibrous Bound			97%	Vinyl	3% Chrysotile

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Matrix Health & Safety Consultants
2900 Yonkers Road
Raleigh, NC 27604

Lab Code: A2112979
Date Received: 08-23-21
Date Analyzed: 08-24-21
Date Reported: 08-24-21

Project: Brooks Hall NCSU, HVAC

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
A184072B	Mastic	Homogeneous Black Non-fibrous Bound			93%	Mastic	7% Chrysotile
BH-8 A184073	Sample Not Analyzed per COC						
BH-9 A184074	Vibration Dampener	Homogeneous White,Black Fibrous Bound	25%	Fiberglass	75%	Binder	None Detected
BH-10 A184075	Vibration Dampener	Homogeneous White,Black Fibrous Bound	25%	Fiberglass	75%	Binder	None Detected
BH-11 A184076	Block Sealant	Heterogeneous White,Tan Non-fibrous Tightly Bound			45% 25% 30%	Binder Silicates Paint	None Detected
BH-12 A184077	Block Sealant	Heterogeneous White,Tan Non-fibrous Tightly Bound			45% 25% 30%	Binder Silicates Paint	None Detected
BH-13 A184078	Block Sealant	Heterogeneous White,Tan Non-fibrous Tightly Bound			45% 25% 30%	Binder Silicates Paint	None Detected
BH-14 A184079	Carpet Mastic	Homogeneous Yellow Fibrous Bound	<1% <1%	Cellulose Synthetic Fiber	95% 5%	Mastic Silicates	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Matrix Health & Safety Consultants
2900 Yonkers Road
Raleigh, NC 27604

Lab Code: A2112979
Date Received: 08-23-21
Date Analyzed: 08-24-21
Date Reported: 08-24-21

Project: Brooks Hall NCSU, HVAC

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
BH-15 A184080	Carpet Mastic	Homogeneous	<1%	Cellulose	95%	Mastic	None Detected
		Yellow	<1%	Synthetic Fiber	5%	Silicates	
		Fibrous					
		Bound					
BH-16 A184081	Drywall/patch	Heterogeneous	15%	Cellulose	75%	Gypsum	None Detected
		Gray,White			10%	Calc Carb	
		Non-fibrous			<1%	Paint	
		Bound					
BH-17 A184082	Drywall/patch	Heterogeneous	15%	Cellulose	75%	Gypsum	None Detected
		Gray,White			10%	Calc Carb	
		Non-fibrous			<1%	Paint	
		Bound					

LEGEND: Non-Anth = Non-Asbestiform Anthophyllite
 Non-Trem = Non-Asbestiform Tremolite
 Calc Carb = Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORTING LIMIT: <1% by visual estimation

REPORTING LIMIT FOR POINT COUNTS: 0.25% by 400 Points or 0.1% by 1,000 Points

REGULATORY LIMIT: >1% by weight

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. *Estimated measurement of uncertainty is available on request.*

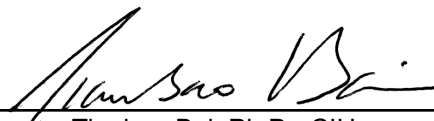
This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

ANALYST:


Elisabeth Thinh

APPROVED BY:


Tianbao Bai, Ph.D., CIH
Laboratory Director



CEI

CHAIN OF CUSTODY

730 SE Maynard Road, Cary, NC 27511
Tel: 866-481-1412; Fax: 919-481-1442

LAB USE ONLY:

CEI Lab Code:

A2112979

CEI Lab I.D. Range:

A184066-A184082

17

COMPANY INFORMATION		PROJECT INFORMATION	
CEI CLIENT #:		Job Contact: Gregg E. Heppert	
Company: Matrix Health & Safety Consultants, LLC		Email / Tel: 919.868.2154	
Address: 2900 Yonker s Road		Project Name: Brooks Hsu NCSU	
Raleigh, NC 27604		Project ID#: HVAC	
Email: gregg@matrixhsc.com		PO #:	
Tel: 919.833.25250 Fax:		STATE SAMPLES COLLECTED IN: NC	

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	1 DAY	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM POINT COUNT (400)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM POINT COUNT (1000)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM GRAV w POINT COUNT	EPA 600		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM BULK	CARB 435		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCM AIR	NIOSH 7400	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	EPA AHERA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	NIOSH 7402	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR (PCME)	ISO 10312	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	ASTM 6281-15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM BULK	CHATFIELD		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM DUST WIPE	ASTM D6480-05 (2010)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM DUST MICROVAC	ASTM D5755-09 (2014)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM SOIL	ASTM D7521-16			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM VERMICULITE	CINCINNATI METHOD			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM QUALITTATIVE	IN-HOUSE METHOD		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OTHER:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REMARKS / SPECIAL INSTRUCTIONS: 8/23/2021 - Tile throughout 3rd Floor CALS & Beneath CARPET - " " " 2ND Floor Beneath Carpet + Stop where marked		<input checked="" type="checkbox"/> Accept Samples <input type="checkbox"/> Reject Samples	
Relinquished By:	Date/Time	Received By:	Date/Time
	8/23-2021	JB	8/23 3:10

Samples will be disposed of 30 days after analysis



CEI

SAMPLING FORM

COMPANY CONTACT INFORMATION

Company: Matrix Health & Safety Consultants, LLC

Job Contact: Gregg E. Heppert

Project Name: Brooks Hall NCS4 HVAC

Project ID #:

Tel: 919.868.2154

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST	
BH-1	ceiling texture	316	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-2	"	316A	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-3	"	318	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-4	PLASTER	316	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-5	"	316A	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-6	"	318	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-7	9x9 Black w/ white Fx	316	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-8	" "	316A	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-9	Vibration Dampers	316	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-10	" "	316A	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-11	Block Sealant	316	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-12	"	318	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-13	"	212A	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-14	Carpet Mastic	212A	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-15	" "	215	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-16	Drywall + Patch	212E	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
BH-17	"	215	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
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			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
			PLM <input type="checkbox"/>	TEM <input type="checkbox"/>

Matrix Health & Safety Consultants, LLC

2900 Yonkers Road
Raleigh, NC 27604

INSPECTION DATE:	8/23/2021 - 8/23/2021
INSTRUMENT TYPE:	Heuresis Corp. Pb200i XRF Lead Paint Analyzer 2486
ACTION LEVEL:	1.0 mg/cm ²
Job ID:	08231204 Brooks Hall NCSU
STATEMENT:	Gregg E. Heppert NC 120151

Matrix Health & Safety Consultants, LLC

Inspection Date: 8/23/2021 - 8/23/2021
 Action Level: 1.0 mg/cm²
 Total Readings: 15
 Unit Started: 08/23/2021 12:04:56
 Unit Ended: 08/23/2021 14:30:46

Inspection Site: Brook Hall
 NCSU
 HVAC Upgrades

Read #	Result	RTA Present	COMPONENTS	SUBSTRATE	SIDE	CONDITION	Color	Floor	ROOM	Lead (mg/cm ²)	Mode
982		Off			Calibration					1.0 mg/cm ²	Action Level
983		Off			Calibration					1.0 mg/cm ²	Action Level
984		Off			Calibration					1.1 mg/cm ²	Action Level
985		Off			Calibration					0.2 mg/cm ²	Action Level
986		Off			Calibration					0.1 mg/cm ²	Action Level
987		Off			Calibration					0.1 mg/cm ²	Action Level
993 🧑	Positive	Off	Floor	Vinyl	D	Intact	Black		Room 316	1.2 mg/cm ²	Action Level
999	Positive	Off	Floor	Vinyl	C	Intact	Black		Room 316A	1.2 mg/cm ²	Action Level
1008 🧑	Positive	Off	Floor	Vinyl	A	Intact	Black		Room 319	1.2 mg/cm ²	Action Level
1043		Off			Calibration					1.1 mg/cm ²	Action Level
1044		Off			Calibration					1.0 mg/cm ²	Action Level
1045		Off			Calibration					1.1 mg/cm ²	Action Level
1046		Off			Calibration					0.1 mg/cm ²	Action Level
1047		Off			Calibration					0.2 mg/cm ²	Action Level
1048		Off			Calibration					0.2 mg/cm ²	Action Level

----- END OF READINGS -----

2900 Yonkers Road Raleigh, NC 27604

Selected images...



Reading #993



Reading #1008

Matrix Health & Safety Consultants, LLC

2900 Yonkers Road
Raleigh, NC 27604

INSPECTION DATE:	8/23/2021 - 8/23/2021
INSTRUMENT TYPE:	Heuresis Corp. Pb200i XRF Lead Paint Analyzer 2486
ACTION LEVEL:	1.0 mg/cm ²
Job ID:	08231204 Brooks Hall NCSU
STATEMENT:	Gregg E. Heppert NC 120151

Matrix Health & Safety Consultants, LLC

Inspection Date: 8/23/2021 - 8/23/2021
 Action Level: 1.0 mg/cm²
 Total Readings: 67
 Unit Started: 08/23/2021 12:04:56
 Unit Ended: 08/23/2021 14:30:46

Inspection Site: Brook Hall
 NCSU
 HVAC Upgrades

Read #	Result	RTA Present	COMPONENTS	SUBSTRATE	SIDE	CONDITION	Color	Floor	ROOM	Lead (mg/cm ²)	Mode
982		Off			Calibration					1.0 mg/cm ²	Action Level
983		Off			Calibration					1.0 mg/cm ²	Action Level
984		Off			Calibration					1.1 mg/cm ²	Action Level
985		Off			Calibration					0.2 mg/cm ²	Action Level
986		Off			Calibration					0.1 mg/cm ²	Action Level
987		Off			Calibration					0.1 mg/cm ²	Action Level
988	Negative	Off	Wall	Cinderblock	B	Intact	White		Room 316	0.0 mg/cm ²	Action Level
989	Negative	Off	Wall	Cinderblock	D	Intact	White		Room 316	0.0 mg/cm ²	Action Level
990	Negative	Off	Ceiling	Plaster	D	Intact	White		Room 316	0.2 mg/cm ²	Action Level
991	Negative	Off	Duct	Metal	D	Intact	White		Room 316	0.1 mg/cm ²	Action Level
992	Negative	Off	Duct	Metal	D	Intact	White		Room 316	0.1 mg/cm ²	Action Level
993	Positive	Off	Floor	Vinyl	D	Intact	Black		Room 316	1.2 mg/cm ²	Action Level
994	Negative	Off	Wall	Cinderblock	B	Intact	White		Room 316A	0.0 mg/cm ²	Action Level
995	Negative	Off	Wall	Cinderblock	D	Intact	White		Room 316A	-0.1 mg/cm ²	Action Level
996	Negative	Off	Column	Cinderblock	D Left	Intact	White		Room 316A	0.3 mg/cm ²	Action Level
997	Negative	Off	Ceiling	Plaster	A	Intact	White		Room 316A	0.1 mg/cm ²	Action Level
998	Negative	Off	Ceiling	Plaster	A	Intact	White		Room 316A	0.1 mg/cm ²	Action Level
999	Positive	Off	Floor	Vinyl	C	Intact	Black		Room 316A	1.2 mg/cm ²	Action Level

2900 Yonkers Road Raleigh, NC 27604

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Inspection Site: Brook Hall
 NCSU
 HVAC Upgrades

Read #	Result	RTA Present	COMPONENT	SUBSTRATE	SIDE	CONDITION	Color	Floor	ROOM	Lead (mg/cm ²)	Mode
1000	Negative	Off	BaseBoard	Wood	B	Deteriorated	White		Room 316A	0.3 mg/cm ²	Action Level
1001	Negative	Off	Wall	Cinderblock	B	Intact	White		Room 319	-0.1 mg/cm ²	Action Level
1002	Negative	Off	Wall	Brick	B	Intact	White		Room 319	0.1 mg/cm ²	Action Level
1003	Negative	Off	Wall	Brick	C	Intact	White		Room 319	0.1 mg/cm ²	Action Level
1004	Negative	Off	Wall	Brick	D	Intact	White		Room 319	0.0 mg/cm ²	Action Level
1005	Negative	Off	Wall	Cinderblock	D	Intact	White		Room 319	-0.1 mg/cm ²	Action Level
1006	Negative	Off	BaseBoard	Wood	D	Deteriorated	White		Room 319	0.4 mg/cm ²	Action Level
1007	Negative	Off	Ceiling	Plaster	A	Intact	White		Room 319	-0.2 mg/cm ²	Action Level
1008 🧑	Positive	Off	Floor	Vinyl	A	Intact	Black		Room 319	1.2 mg/cm ²	Action Level
1009	Negative	Off	Wall	Cinderblock	B	Intact	White		Room 318	-0.2 mg/cm ²	Action Level
1010	Negative	Off	Wall	Brick	C	Intact	White		Room 318	0.1 mg/cm ²	Action Level
1011	Negative	Off	Wall	Cinderblock	D	Intact	White		Room 318	-0.2 mg/cm ²	Action Level
1012	Negative	Off	BaseBoard	Wood	D	Deteriorated	White		Room 318	0.2 mg/cm ²	Action Level
1013	Negative	Off	Ceiling	Plaster	A	Intact	White		Room 318	-0.2 mg/cm ²	Action Level
1014	Negative	Off	Ductwork	Metal	A	Intact	White		Room 318	0.0 mg/cm ²	Action Level
1015	Negative	Off	Ductwork	Metal	A	Intact	White		Room 318	0.1 mg/cm ²	Action Level
1016	Negative	Off	Wall	Cinderblock	B	Intact	White		Room 317	-0.1 mg/cm ²	Action Level
1017	Negative	Off	Wall	Brick	C	Intact	White		Room 317	0.1 mg/cm ²	Action Level

2900 Yonkers Road Raleigh, NC 27604

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Inspection Site: Brook Hall
 NCSU
 HVAC Upgrades

Read #	Result	RTA Present	COMPONENT	SUBSTRATE	SIDE	CONDITION	Color	Floor	ROOM	Lead (mg/cm ²)	Mode
1018	Negative	Off	Wall	Cinderblock	D	Intact	White		Room 317	0.0 mg/cm ²	Action Level
1019	Negative	Off	Ceiling	Plaster	B	Intact	White		Room 317	0.2 mg/cm ²	Action Level
1020	Negative	Off	Ductwork	Metal	C	Intact	White		Room 317	0.1 mg/cm ²	Action Level
1021	Negative	Off	Wall	Cinderblock	B	Intact	White		Room 212	-0.2 mg/cm ²	Action Level
1022	Negative	Off	Wall	Cinderblock	D	Intact	White		Room 212	-0.2 mg/cm ²	Action Level
1023	Negative	Off	Wall	Drywall	B	Intact	White		Room 212	0.2 mg/cm ²	Action Level
1024	Negative	Off	Wall	Cinderblock	B	Intact	White		Room 212	-0.3 mg/cm ²	Action Level
1025	Negative	Off	Ceiling	Plaster	B	Intact	White		Room 212	0.3 mg/cm ²	Action Level
1026	Negative	Off	Wall	Brick	B Right	Intact	White		Room 212	0.0 mg/cm ²	Action Level
1027	Negative	Off	Ductwork	Metal	B	Intact	White		Room 212	0.1 mg/cm ²	Action Level
1028	Negative	Off	Ductwork	Metal	B	Intact	White		Room 212	-0.2 mg/cm ²	Action Level
1029	Negative	Off	Wall	Cinderblock	B	Intact	White		Room 215	-0.2 mg/cm ²	Action Level
1030	Negative	Off	Wall	Brick	C	Intact	White		Room 215	0.1 mg/cm ²	Action Level
1031	Negative	Off	Wall	Cinderblock	D	Intact	White		Room 215	-0.1 mg/cm ²	Action Level
1032	Negative	Off	Wall	Drywall	A	Intact	White		Room 215	0.0 mg/cm ²	Action Level
1033	Negative	Off	BaseBoard	Wood	D	Intact	White		Room 215	0.2 mg/cm ²	Action Level
1034	Negative	Off	Ceiling	Drywall	A	Intact	White		Room 215	0.2 mg/cm ²	Action Level
1035	Negative	Off	Ductwork	Metal	A	Intact	White		Room 215	0.1 mg/cm ²	Action Level

2900 Yonkers Road Raleigh, NC 27604

Matrix Health & Safety Consultants, LLC

Inspection Date: 8/23/2021 - 8/23/2021
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Inspection Site: Brook Hall
 NCSU
 HVAC Upgrades

Read #	Result	RTA Present	COMPONENT	SUBSTRATE	SIDE	CONDITION	Color	Floor	ROOM	Lead (mg/cm ²)	Mode
1036	Negative	Off	Wall	Cinderblock	B	Intact	White		Room 216	-0.1 mg/cm ²	Action Level
1037	Negative	Off	Wall	Brick	C	Intact	White		Room 216	0.0 mg/cm ²	Action Level
1038	Negative	Off	Wall	Brick	D	Intact	White		Room 216	0.0 mg/cm ²	Action Level
1039	Negative	Off	Wall	Cinderblock	D	Intact	White		Room 216	-0.2 mg/cm ²	Action Level
1040	Negative	Off	Ceiling	Plaster	A	Intact	White		Room 216	-0.2 mg/cm ²	Action Level
1041	Negative	Off	Ductwork	Metal	A	Intact	White		Room 216	0.0 mg/cm ²	Action Level
1042	Negative	Off	Wall	Drywall	B Right	Intact	White		Room 216	0.1 mg/cm ²	Action Level
1043		Off			Calibration					1.1 mg/cm ²	Action Level
1044		Off			Calibration					1.0 mg/cm ²	Action Level
1045		Off			Calibration					1.1 mg/cm ²	Action Level
1046		Off			Calibration					0.1 mg/cm ²	Action Level
1047		Off			Calibration					0.2 mg/cm ²	Action Level
1048		Off			Calibration					0.2 mg/cm ²	Action Level

----- END OF READINGS -----

2900 Yonkers Road Raleigh, NC 27604

Selected images...



Reading #993



Reading #1008

STATE OF NORTH CAROLINA
NORTH CAROLINA STATE UNIVERSITY
BROOKS HALL
SCO# 22-25338-02A



ASBESTOS ABATEMENT SPECIFICATIONS
Not for Construction

Matrix Health & Safety Consultants, L.L.C.
Gregg E. Heppert
NC Asbestos Designer No 40357
June 19, 2024
95% Review

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DRAWINGS

AB-1: Asbestos Abatement – Level 1

AB-2: Asbestos Abatement – Level 2

AB-3: Asbestos Abatement – Level 3

SECTION 01043

PROJECT COORDINATION

1.01 GENERAL

- A. All asbestos abatement contractors will be licensed general contractors in either the specialty interior, building, unclassified or asbestos categories by the North Carolina Licensing Board of General Contractors and limited for the bid amount.
- B. The contractor shall be responsible for inspecting the site prior to bidding to confirm the scope of the work. Any quantities listed by the designer in the plans, specifications or survey are done so as approximations. The actual quantities of asbestos-containing material to be encountered are the responsibility of the contractor.
- C. The contractor shall furnish and is responsible for all costs including, but not limited to: permit fees, containment preparation, labor, materials, services, insurance, bonding, and equipment necessary to carry out the abatement operations and disposal of all asbestos material in accordance with the plans and specifications, the EPA and OSHA regulations, and any applicable state and local government regulations.
- D. The contractor/employer has and assumes the responsibility of proceeding in such a manner that he offers his employees a workplace free of recognized hazards causing or likely to cause death or serious injury. The contractor shall be responsible for performing this abatement and disposal so that airborne asbestos fiber levels do not exceed established levels.
- E. The contractor will be responsible for all costs associated with employee monitoring to meet the OSHA requirements.
- F. The contractor is responsible for all costs, including additional visits, should the designer and/or the industrial hygiene firm determine that the contractor failed a final inspection. Notification and scheduling of the final inspection during the project is the responsibility of the contractor. The contractor will allow a minimum notice of 48 hours unless a different time frame is agreed upon by the designer and the contractor.
- G. Contractor shall coordinate all asbestos removal activities with the owner and designer. Owner shall have continuous use of areas not included in the scope of this project.

1.02 PERSONNEL

A. Supervisor

1. All supervisors shall be accredited by the Health Hazards Control Unit (HHCU).
2. All supervisors on the project shall have two years experience in the administration and supervision of asbestos abatement projects including work practices, protective measures for building and personnel, disposal procedures, etc.
3. One supervisor shall be provided for every 10 workers inside the containment. A minimum of one supervisor shall be provided per work area containment.
4. The contractor shall have at least one employee on the job site in either a foreman or supervisor's position who is bilingual in the appropriate languages when employing workers who do not speak fluent English.
5. A minimum of one supervisor per company shall have attended a 24 hour respiratory protection course.

B. Worker

1. All workers shall be accredited by the HHCU.

C. Competent Person

1. A competent person, as defined in the OSHA asbestos standard 29 CFR 1926.1101, employed by the contractor must be outside the work area at all times to monitor activity, ensure containment security, provide information to visitors, and provide access to the work area.

D. Employees

1. The contractor is responsible for the behavior of workers within his employment. If at any time during the contracted work, any of his employees are judged to exhibit behavior unfitting for the area or judged to be a nuisance by the owner or designer, the contractor shall remove them immediately from the project.
2. The contractor shall be responsible for compliance with the following concerning employee behavior:
 - a. Under no circumstances is alcohol, drugs or any other type of controlled substances permitted on state property.
 - b. All workers are restricted to the construction project site only.

- c. All vehicles must be parked in areas prearranged with the owner.
 - d. All workers must conform to the following basic dress code when in public areas of the project confines: long pants, shirts, no tank tops, no shorts, no bare backs.
 - e. The contractor is responsible for disposal of all trash brought on state property by his employees, including drink cans, bottles or other food containers and wrappers.
3. Failure to adhere to these rules could result in removal from State property and/or criminal prosecution.

1.03 MEETINGS

A. Prebid

- 1. A prebid conference will be held by the designer. All contractors submitting a bid are **required** to attend, visit the site and ask questions concerning the plans and specifications.
- 2. The designer will review the plans and specifications, present required techniques and safeguards for the removal of the asbestos and identify locations of water, electrical sources, etc.
- 3. Any minutes, new points or clarifications raised during the meeting will be issued by the designer in an addendum seven days prior to bids.

B. Preconstruction

- 1. A preconstruction meeting will be held for the purpose of coordinating work and confirming work practices. The contractors project manager and supervisor who will perform the project are required to attend.

1.04 PRE-JOB SUBMITTALS

- A. Submit three complete, bound sets of pre-job submittals to the designer at least 10 days prior to start of work. Work is prohibited until submittal package has been reviewed and approved by designer. A copy of the approved submittals shall be kept in a three-ring binder (project log) by the contractor at the project site in the clean room or in the on-site office of the contractor.
- 1. Notifications: Provide copies of Asbestos Permit Application and Notification for Demolition/Renovation (DEHNR 3768), which provide written notice to all required agencies, including North Carolina HHCU. Provide notification letters to local EMS, fire and police departments.

2. Employee List: Provide copies of lists of supervisors and workers, along with their accreditation and Social Security numbers, to be utilized on the project.
3. Permits: Provide copies of approval of a waste disposal site in compliance with 40 CFR 61.154.
4. Medical: Include individually signed and notarized forms by each worker to be utilized on the project documenting that each is actively involved in a company employee medical surveillance program.
5. Respirator Training: Copies of most recent fit testing records, individually signed for each worker to be utilized on the project.
6. Project Schedule: Time schedule for the project, outlining the proposed start, setup, clearances, etc. for the project.
7. Initial Exposure Assessment: As required by the OSHA construction asbestos standard 29 CFR 1926.1101.
8. Any other programs or training as outlined by the OSHA and EPA standards.

1.05 POST-JOB SUBMITTALS

- A. Submit three complete, bound sets of post-job submittals to the designer following the final completion of the work. Requests for final payment will not be approved until the submittal package has been reviewed and approved by the designer.
 1. Affidavits: Contractor's affidavit of payment of debts and claims, affidavit of release of liens, and consent of surety company to final payment.
 2. Manifest: North Carolina Asbestos Waste Shipment Record (DEHNR 3787) receipt from landfill operator which acknowledges the contractor's delivery(s) of waste material. Include date, quantity of material delivered and signature of authorized representative of landfill. Also, include name of waste transporter.
 3. Daily Log: A notarized copy of all daily logs showing the following: name, date, entering and leaving time, company or agency represented, reason for entry for all persons entering the work area, employee's daily air monitoring data as required by the OSHA standard and written comments by inspectors, industrial hygienists, designers and visitors.
 4. Worker Submittals: Provide copies of accreditations, social security numbers, and medicals for all new workers utilized on the project.
 5. Special Reports: All documents generated under Section 01043.1.06.

1.06 SPECIAL REPORTS

- A. General: Except as otherwise indicated, submit special reports to designer within one day of occurrence requiring special report, with copies to others affected by occurrence. Also keep a copy in the project log book.
- B. Reporting Unusual Events: When an event of unusual and significant nature occurs at site (examples: failure of negative pressure system, rupture of temporary enclosures), prepare and submit a special report to the designer immediately, listing chain of events, persons participating, response by contractor's personnel, evaluation of results or effects, and similar pertinent information. When such events are known or predictable in advance, advise designer in advance at earliest possible date.
- C. Reporting Accidents: Prepare and submit reports of significant accidents, at site and anywhere else work is in progress. Record and document date and actions; comply with industry standards for reporting accidents. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.

1.07 CONTINGENCY PLAN

- A. Contingency Plan: Prepare a contingency plan for emergencies including fire, accident, power failure, negative pressure system failure, supplied air system failure (if applicable), evacuation of injured persons for both life threatening and non-life threatening, or any other event that may require modification or abridgment of decontamination or work area isolation procedures. Include in plan specific procedures for decontamination or work area isolation. Note that nothing in this specification should impede safe exiting or providing of adequate medical attention in the event of an emergency. Keep these plans in the on-site office.
- B. Post outside/in clean room of Personnel Decontamination Unit:
 - 1. The campus emergency phone number (515-3333). Telephone numbers of other services including but not limited to, NCSU Fire Protection (515-2568), Campus Police (515-5963), NCSU Environmental Health and Safety and the North Carolina HHCU.
 - 2. A copy of Material Safety Data Sheets (MSDS) for any chemicals used during the asbestos project.
 - 3. The contractor shall post asbestos signs in each appropriate language as per the OSHA 29 CFR 1926.1101 standard.

SECTION 01092

CODES AND REGULATIONS

1.01 REFERENCE SPECIFICATIONS

The contractor shall assume full responsibility and liability for compliance with all applicable federal, state and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site.

Unless modified by this project specification, all specifications for stripping, removal, repair and disposal work shall conform to the following specifications and standards, as applicable, as if completely reproduced herein.

- A. The following regulations published by the Environmental Protection Agency (EPA):
 - 1. "National Emissions Standards for Hazardous Air Pollutants Asbestos," 40 CFR Part 61, Subpart M.
 - 2. "General Provisions," 40 CFR Part 61, Subpart A.
 - 3. "Guidance for Controlling Asbestos-Containing Materials in Buildings" June 1985. (EPA # 560/5-85-024).
 - 4. "Asbestos-Containing Materials in Schools," 40 CFR Part 763, Subpart E including appendices.
- B. The following regulations published by the U.S. Department of Labor, OSHA:
 - 1. "Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules," Title 29, Part 1910, Section 1001 and Part 1926, Section 1101 of the Code of Federal Regulations.
 - 2. "Respiratory Protection," Title 29, Part 1910, Section 134 of the Code of Federal Regulations.
 - 3. Construction Industry, Title 29, Part 1926, of the Code of Federal Regulations.
 - 4. "Access to Employee Exposure and Medical Records," Title 29, Part 1910, Section 20 of the Code of Federal Regulations.
 - 5. "Hazard Communication," Title 29, Part 1926, Section 59 of the Code of Federal Regulations.
 - 6. "Specifications for Accident Prevention Signs and Tags," Title 29, Part 1910, Section 145 of the Code of Federal Regulations.

- C. The following regulations published by North Carolina state agencies:
1. North Carolina Asbestos Hazard Management Program Rules as adopted by 10 NCAC 41 .0600.
 2. "North Carolina Occupational Safety and Health Standards for the Construction Industry," 29 CFR Part 1926 as adopted by T13 NCAC 07F .0201, and shipyard T13:07F.0500.
 3. North Carolina General Statutes, Chapter 95, 97, 130.
- D. The following documents published by the American National Standards Institute:
1. "Fundamentals Governing the Design and Operation of Local Exhaust Systems," Z9.2-1979.
 2. "American National Standard for Respiratory Protection Respiratory Use - Physical Qualifications for Personnel," Z88.6-1984.
 3. "Practices for Respiratory Protection," Z88.2-1992.

1.02 NOTICES

- A. The contractor shall notify the following offices in writing within the time frame specified by the NESHAP regulations prior to beginning any asbestos removal operations.
1. State Agencies

Health Hazards Control Unit
N.C. Department of Health and Human Services –OEEB
Division of Public Health
(Regular Mail)
1912 Mail Service Center
Raleigh, N.C. 27699-1912
Telephone: (919) 733-0820
Fax: (919) 733-8493

N.C. Department of Labor
Division of Occupational Safety and Health
319 Chapanoke Road, Suite 105
Raleigh, N.C. 27603-3432
Telephone: 1-800-LABOR-NC or (919) 662-4602
Fax: (919) 662-4625

(UPS, Fed Ex, etc.)
Room D-1
5505 Six Forks Road
Raleigh, N.C. 27609
 2. Emergency Departments

Notify the local emergency medical services, NCSU Fire Protection (515-2568) and Campus Police (515-5963) in writing of the type and scope of work being performed and request these departments make an inspection prior to beginning the work.

3. Licenses

Maintain current licenses for contractor and accreditation for workers and supervisors as required by applicable State or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the work of this contract.

4. Contractor is responsible for payment of all permit fees required for this project.

SECTION 01410

AIR MONITORING - INDUSTRIAL HYGIENE FIRM

1.01 GENERAL

- A. The designer shall be responsible for the coordination of an industrial hygiene firm. Services of the industrial hygiene firm will be paid by the owner.
- B. Air monitoring shall be done under the direct supervision of a North Carolina accredited supervising air monitor (SAM), except for sampling performed by the contractor to satisfy OSHA requirements.
- C. SAM shall be accredited per the Asbestos Hazard Management Program rules.
- D. Air monitor shall be accredited as per the Asbestos Hazard Management Program rules and work under the direct supervision of a SAM.
- E. The SAM representing each firm shall have taken a 24-hour respiratory protection course that is either NIOSH, AIHA or HHCU recognized.
- F. The industrial hygiene firm shall submit copies of their N.C. accreditation's and documentation on respiratory protection training to the designer prior to the award of the contract.
- G. If specific project activities are assigned to an air monitor, the SAM is expected to be in direct control and responsible for industrial hygiene work completed on the project. The SAM shall approve and sign all air monitoring results performed by the air monitor. The SAM signature must be an original. No rubber stamp signature shall be accepted.
- H. Employees of the HHCU shall have right of entry into the project. The HHCU's SAM shall have final authority over the industrial hygiene firm on the project.

1.02 DESCRIPTION OF WORK

- A. The industrial hygiene firm shall offer expertise to the designer and contractor, but is not directly responsible for the performance of the job.
- B. At the job site, the industrial hygiene firm is expected to observe, be aware, and comment on general work site conditions and activities as they relate to the specifications and profession of industrial hygiene, and make recommendations in writing to the designer and contractor.
- C. The industrial hygiene firm is responsible for overseeing the protection of the environment from contamination, protection of persons in adjacent areas, and assurance that the areas are acceptable for occupancy.

- D. The industrial hygiene firm has the authority to direct the contractor relative to safety and environmental concerns. This includes stopping the work if necessary. All directions and comments made by the industrial hygiene firm to the contractor shall be written with a copy to the designer.
- E. The industrial hygiene firm shall furnish the contractor a copy of his field report within 24 hours of the visit. Copies of field notes and reports of observations shall be kept in project log book.
- F. The SAM shall review and make comments to the designer on the submittals listed in Section 01043.
- G. The SAM shall approve any change in contractor's respiratory protection. This includes a review of the historical data.
- H. The industrial hygiene firm is to conform to the contractor's schedule and shall respond to necessary changes, provided an advance notice is given as outlined in Section 01043.
- I. The industrial hygiene firm's project monitor shall furnish designer and contractor with a pager or mobile phone number where he can be reached quickly at all times.
- J. The industrial hygiene firm shall notify the designer and contractor, in writing, of any failed clearance visits.
- K. At the completion of the project, the industrial hygiene firm shall prepare a report describing the assessment of the project, all air monitoring data, acceptance letters, calibration records, and a description of the project as it proceeded to completion and submit four copies of the report to the designer.

1.03 AIR MONITORING

- A. Ambient Air Monitoring: The purpose of ambient air monitoring by the industrial hygiene firm will be to detect discrepancies in the work area isolation such as:
 - 1. Contamination of the building outside of the work area with airborne asbestos fibers.
 - 2. Failure of filtration or rupture in the negative pressure system.
 - 3. Confirm the work practices established by the contractor and respiratory protection provided for employees are adequate.
- B. Work Area Airborne Fiber Levels: The owner's industrial hygiene firm will monitor airborne fiber levels in the work area. The purpose of this air monitoring will be to detect airborne fiber levels which may challenge the ability of the work area isolation procedures to protect the balance of the building or outside of the building from contamination by airborne fibers.

- C. Work Area Clearance: To determine if the elevated airborne fiber levels encountered during abatement operations have been reduced to an acceptable level, the industrial hygiene firm will sample and analyze air per Section 01714.
- D. In accordance with AHMB Program Rules, the SAM shall develop an Abatement Project Monitoring Plan which complies with EPA and OSHA analytical criteria and will provide a valid representation of airborne fiber concentrations both inside and outside the work area. This program is not intended to satisfy the contractor's requirement for sampling under the OSHA regulation. All personnel and area sampling conducted by the industrial hygiene firm shall be personally observed. Air sampling pumps shall not be left unattended for extended periods of time.
 - 1. The SAM shall submit a written project monitoring plan to the designer with a copy to the contractor and NCSU-EHSU. The following information shall be required for the submittal.
 - a. The name, address and telephone number of the industrial hygiene firm.
 - b. The name, address, telephone number and NIOSH's PAT designation and proficiency data for the laboratory analyzing the air samples. Analysis of all samples collected shall be by a laboratory currently proficient in NIOSH's "Proficiency Analytical Testing Program for Laboratory Quality Control" for asbestos. The acceptable sampling and analysis method is NIOSH 7400, latest revision.

Persons performing phase contrast microscopy (PCM) analysis at the asbestos removal location shall be proficient in the American Industrial Hygiene Association's Asbestos Analyst Registry Program [AAR].
 - c. A proposed air sampling strategy which shall include: a projected number of air samples, locations, the types of air samples to be collected (personal, area, ambient), how the air samples are to be collected (TWA, ceiling, other), the equipment to be used (pumps, calibration equipment, filters, other), and how the samples will be transported to the laboratory.
 - 1. All personal air samples will be collected in such a manner as to comply with OSHA collection and analytical regulations and to provide a valid representation of airborne fiber levels. The samples collected by the industrial hygiene firm on personnel do not satisfy the contractor's responsibility under OSHA.

2. All final area air sampling will comply with all State and Federal requirements in measuring airborne asbestos following an abatement action.
 3. Air samples will be analyzed and results made available as per the AHMB Program Rules. Copies of all air sampling results shall be signed by the SAM and a copy posted at the job site. These copies shall include the following: sample number, sample location, activity represented by sample, flow rate, sample time, comments and sample results. A statement will be included on each submission that the requirements of this contract have been met as they apply to the activities of the SAM.
 4. If TWA samples are being collected by the contractor for the purpose of reducing respiratory protection requirements, the industrial hygiene firm shall directly observe the conditions and work practices represented by each sample and make appropriate notes in the bound book on site. The SAM shall review all TWA air sampling results which are used for reducing respiratory protection requirements before accepting the results.
- E. Supplemental air monitoring may be conducted inside and outside the work area by the HHCU. This supplemental sampling does not fulfill air monitoring responsibilities required by OSHA, EPA or this contract.

SECTION 01503

TEMPORARY FACILITIES

1.01 GENERAL

- A. Provide temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the work.
- B. Use qualified tradesmen for installation of temporary services and facilities. Locate, modify and extend temporary services and facilities where they will serve the project adequately and result in minimum interference with the performance of the work.
- C. The owner's maintenance personnel shall lock and tag out all electrical and HVAC equipment in the asbestos abatement area. The contractor shall verify that the power and HVAC have been locked and tagged out prior to beginning work. The owner shall also deactivate smoke detectors located inside the containment boundaries.
- D. The owner shall move all equipment prior to the contractor's arrival date as specified.

1.02 WATER SERVICE

- A. Owner shall supply a source of water. Contractor bears all expense of heating and getting water to the work and decontamination areas.
- B. Supply hot and cold water to the decontamination unit in accordance with Section 01563. Hot water shall be supplied at a minimum temperature of 100 degrees Fahrenheit.
- C. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment.

1.03 ELECTRICAL SERVICE

- A. General: Comply with applicable NEMA, NEC and UL standards and governing state and local regulations for materials and layout of temporary electric service.
- B. Ground Fault Protection: Provide receptacle outlets equipped with ground fault circuit interrupters, reset button and pilot light, for plug-in connection of power tools and equipment.
- C. Provide a weatherproof, grounded temporary electric power service and distribution system of sufficient size, capacity and power characteristics to accommodate performance of work during the construction period.
- D. Install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of work.

- E. Provide services of an electrician, on a standby basis, to service electrical needs during the abatement process.
- F. Provide additional power service and distribution service, consisting of individual dedicated 15 amp 120 volt circuits to electrical drops with receptacle outlets equipped with ground fault interrupt protection, color coded for the exclusive use of the industrial hygiene firm. Provide a minimum of five drops per containment inside work area.

1.04 FIRST AID

- A. A minimum of one first aid kit shall be located in the clean room. Additional first aid kits as the contractor feels is adequate or is required by law shall be located throughout the work area.

1.05 FIRE EXTINGUISHERS

- A. Comply with the applicable recommendations of NFPA Standard 10 - "Standard for Portable Fire Extinguishers." Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each work area equipment room and one in the clean room of the personnel decontamination unit.

1.06 TOILET FACILITIES

- A. Provide temporary toilet facilities to be used by contractor's employees. Location of toilet facilities shall be approved by owner.

1.07 PARKING

- A. Park only in areas designated by the owner.

1.08 BUILDING SECURITY

- A. Maintain personnel on-site at all times any portion of the work areas are open or not properly secured. Secure work areas completely at the end of each day.

1.09 STORAGE

- A. Supply temporary storage required for storage of equipment and materials for duration of project. Trailer and storage dumpsters will be maintained in areas designated by the owner.

SECTION 01513

NEGATIVE PRESSURE SYSTEM

1.01 GENERAL

- A. High efficiency particulate air (HEPA) filter exhaust systems equipped with new HEPA filters for each containment shall be used. Exhaust equipment and systems shall comply with ANSI Z9.2-79 and used according to manufacturer's recommendations.
- B. A system of HEPA-equipped air filtration devices shall be configured so that a pressure differential is established between the work area and the surrounding area (-0.02 to -0.04" water column). A continuous chart-recorded manometer shall be used to confirm this condition.
- C. Additional air filtration devices shall be provided inside the work area for emergency standby as well as for circulation of dead air spaces.
- D. The pressure differential shall be maintained at all times after preparation is complete and until the final visual inspection and air tests confirm the area is clean and acceptable for occupancy and until the designer confirms verbally with written follow-up to discontinue the use of the negative pressure system.
- E. Air shall be exhausted outside the building. Any variations must be approved by the designer. Locations of negative air exhaust shall be approved by owner and designer.
- F. The contractor shall check daily for leaks and log his checks in the bound log book. This includes checks internal to air-moving devices.
- G. There shall be a minimum of four air changes per hour in any containment.

SECTION 01526

WORK AREA PREPARATION

1.01 WORK AREA PREPARATION FOR FULL CONTAINMENTS

- A. Before work begins in an area, a decontamination unit must be in operation as outlined in Section 01563.
- B. Completely isolate the work area from other parts of the building so as to prevent contamination beyond the isolated area.
- C. Temporary facilities shall be addressed as outlined in Section 01503.
- D. The contractor shall set up a work area, load out, and decontamination area as shown in the plans and specifications. Any variations must be approved by the designer. The decontamination facility shall consist of a change room, shower room and equipment room as described in Section 01563.
- E. Critical Barriers: The contractor shall thoroughly seal (2-layers of 6-mil polyethylene sheeting) the work area for the duration of the work by completely sealing off all individual openings and fixtures in the work area, including, but not limited to, heating and ventilation ducts, doorways and windows with polyethylene sheeting taped securely in place. If the contractor is using sealant materials to fill in small holes or cracks, the material shall have appropriate fire ratings.
- F. The contractor shall wet clean and/or HEPA vacuum (pre-clean) all surfaces and equipment in the work area suspected of being contaminated with asbestos, but not in direct contact with the asbestos. These items shall be secured in place with polyethylene sheeting or removed from the work area. Surfaces and items scheduled to be pre-cleaned include but not limited to wood walls, wallboard walls, cinderblock walls, ducts etc.
- G. Contractor is responsible for protecting the carpets, walls, ductwork and windows from damage that may occur during the course of this project. The contractor shall bear all costs associated with damaged items within the work area and adjacent to the work area.
- H. Floors: Apply two layers of 6 mil (minimum) polyethylene plastic sheeting with joints overlapped 24 inches and taped securely. Apply one layer of cardboard material between two polyethylene floor layers in areas where carpet is present. Plastic shall be carried up walls a minimum of 12 inches and secured.
- I. Walls: Apply two layers of 6 mil (minimum) polyethylene plastic sheeting with joints lapped 24 inches and taped securely. Plastic shall be lapped over floor coverings and taped securely.

- J. Floors and walls shall be installed in such a manner that they may be removed independently of each other and the critical barriers.
- K. Establish negative pressure as described in section 01513.
- L. Contractor may be required to perform spot abatement to install critical barriers. Contractor shall spray sections of ceiling texture with amended water and scrape small sections of ceiling texture into bags. Debris created should be cleaned using HEPA vacuums and wet methods. Once substrate is clean, install critical barrier. Remove only the ceiling texture necessary to install critical barrier.
- M. Entrances and exits from the work area will have triple barriers of polyethylene plastic sheeting so that the work area is always closed off by one barrier when workers enter or exit.
- N. No water may be left standing on the floor at the end of the work day.
- O. Floor surfaces, carpets, walls, finishes or coverings, etc., that in the contractor's opinion will likely be damaged by water or that may become contaminated with asbestos, shall have additional protective preparation as the contractor sees appropriate, at his cost, to protect the original condition of the surfaces.
- P. Any costs associated with physical damage caused by water or securing polyethylene sheeting to areas inside or outside the abatement area shall be the contractor's responsibility. **If carpets become wet during the course of this project, then the contractor shall steam clean the carpets, at his cost, and filter the water as described in section 01563.**
- Q. The contractor shall establish and mark emergency and fire exits from the work area. Emergency procedures shall have priority over established decontamination entry and exit procedures. Audible and visible fire and emergency evacuation alarms shall be installed so as to be heard and seen throughout the entire work area.
- R. Integrity of these seals shall be regularly checked and maintained by the contractor.
- S. After work area preparation, the contractor shall notify the designer verbally with written follow-up that he is ready for a prework inspection.

SECTION 01560

WORKER PROTECTION

1.01 GENERAL

- A. Provide worker protection as required by OSHA, state and local standards applicable to the work. Contractor is solely responsible for enforcing worker protection requirements at least equal to those specified in this Section.
- B. Each time the work area is entered the contractor shall require all persons to remove all street clothes in the changing room of the personnel decontamination unit and put on new disposable coverall, new head cover, and a clean respirator. Proceed through shower room to equipment room and put on work boots.
- C. Workers shall not eat, drink, smoke, chew gum or chew tobacco in the work area, the equipment room, the load out area, or the clean room.

1.02 WORKER TRAINING

- A. Train all workers in accordance with 29 CFR 1926 and North Carolina state regulations regarding the dangers inherent in handling asbestos, breathing asbestos dust, proper work procedures and personal and area protective measures.

1.03 MEDICAL EXAMINATIONS

- A. Provide medical examinations for all workers. Examination shall as a minimum meet OSHA requirements as set forth in 29 CFR 1926 and N.C. Workmen's Compensation Act Dusty Trades Examination Record (DEHNR Form 2796).

1.04 PROTECTIVE CLOTHING

- A. Provide disposable full-body coveralls and disposable head covers, and require that they be worn by all workers in the work area. Provide a sufficient number for all required changes, for all workers in the work area.
- B. Boots: Provide work boots with non-skid soles and, where required by OSHA, foot protection for all workers.
- C. Gloves: Provide work gloves to all workers and require that they be worn at the appropriate times. Do not remove gloves from work area. Dispose of work gloves as asbestos-contaminated waste at the completion of the project.

1.05 ADDITIONAL PROTECTIVE EQUIPMENT

- A. Type C respirators, disposable coveralls, head covers and footwear covers shall be provided by the contractor for the owner, the designer, Industrial hygiene firm and other authorized representatives who may inspect the job site.

1.06 DECONTAMINATION PROCEDURES

- A. Require that all workers use the following decontamination procedure as a minimum requirement whenever leaving the work area:
 - 1. Remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room.
 - 2. Still wearing respirators, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos fibers while showering. The following procedure is required as a minimum:
 - a. Thoroughly wet body including hair and face.
 - b. With respirator still in place thoroughly wash body, hair, respirator face piece, and all exterior parts of the respirator.
 - c. Take a deep breath, hold it and/or exhale slowly, completely wet hair, face and respirator. While still holding breath, remove respirator and hold it away from face before starting to breathe.
 - d. Carefully wash face piece of respirator inside and out.
 - e. Shower completely with soap and water; rinse thoroughly.
 - f. Rinse shower room walls and floor prior to exit.
 - g. Proceed from shower to changing (clean) room and change into street clothes or new disposable work items.
 - 3. After showering, each employee shall inspect, clean and repair his respirator as needed. The respirator shall be dried, placed in a suitable storage bag and properly stored.

SECTION 01562

RESPIRATORY PROTECTION

1.01 DESCRIPTION OF WORK

- A. Instruct and train each worker involved in asbestos abatement in proper respirator use and require that each worker always wear a respirator, properly fitted on the face, in the work area from the start of any operation which may cause airborne asbestos fibers until the work area is completely decontaminated. Use respiratory protection appropriate for the fiber level encountered in the workplace or as required for other toxic or oxygen-deficient situations encountered.

1.02 GENERAL

- A. Provide workers with personally issued and marked respiratory equipment approved by NIOSH and suitable for the asbestos exposure level in the work areas according to OSHA Standard 29 CFR 1926.1101 and other possible contaminants employees might be exposed to during the project.
- B. Provide respiratory protection from the time the first operation involved in the project requires contact with asbestos-containing materials (including construction of decontamination units, construction of airtight barriers/barricades, and placing of plastic sheeting on walls) until acceptance of final air clearance test results by the industrial hygiene firm.
- C. The minimum respiratory protection during gross removal of friable ACM in full containment shall be full face powered air purifying respirators as described by 29 CFR 1926.1101.
- D. The contractor may submit a new exposure assessment (as per 29 CFR 1926.1101) to the SAM with a request to downgrade to less protective respirators. The SAM will make a recommendation to the designer, who will issue a decision in writing to the contractor approving or denying his request.
- E. Respirator fit testing shall be performed as a minimum at the beginning of the project, at any change in respiratory protection equipment, and at any time during the project if requested by the employee or SAM. Fit testing is to be performed by one of the methods listed in the 29 CFR 1926.1101, Appendix C.
- F. Where Type C respirators are utilized, the contractor shall provide a minimum of Grade "D" breathing air as set forth in the Compressed Gas Association's "Commodity Specifications for Air," G-7.1. The contractor shall test for Grade "D" breathing air initially and daily thereafter. Daily testing is not needed if the contractor has an air purification system which has CO and organic purging capabilities as well as a continuous CO monitor and alarm calibrated at 10 ppm. The system must be calibrated at least once a week or when it is moved.

- G. Provide emergency backup air supply, egress SCBA or egress HEPA filters for each worker in work area at all times when Type-C (supplied air) respirators are required. Breathing air system shall provide one hour of reserve air, calculated for maximum crew size for emergency evacuation.
- H. Where Type C respirators are utilized, the contractor is required to have an employee in the vicinity of the source of air. The contractor shall take into account the location of the fresh air intake to ensure no pollutant source is in the vicinity. The audible alarm shall be located where the employees inside and outside containment can hear the alarm.
- I. Do not allow the use of single-use, disposable or quarter-face respirators for any purpose.

SECTION 01563

DECONTAMINATION UNITS

1.01 DESCRIPTION OF WORK

- A. Provide separate personnel and equipment/loadout decontamination facilities. Require that the personnel decontamination unit be the only means of ingress and egress for the work area. Require that all materials exit the work area through the equipment/loadout decontamination unit. Contractor shall comply with 29 CFR 1926.1101, specifically paragraph (j) Hygiene facilities and practices for employees.

1.02 GENERAL

Provide separate personnel decontamination units and equipment/loadout decontamination units when practical.

- A. Personnel Decontamination Unit
 - 1. Provide a Personnel Decontamination Unit consisting of a serial arrangement of connected rooms or spaces, changing room, shower room, equipment room. Each shall be separated by a minimum of three curtain doorways. Require all persons without exception to pass through this decontamination unit for entry into and exiting from the work area for any purpose. Do not remove equipment or materials through Personnel Decontamination Unit.
 - 2. Provide temporary lighting within decontamination units as necessary to reach an adequate lighting level.
 - 3. Maintain floor of changing room dry and clean at all times. Do not allow the overflow water from the shower to escape the shower room. **In areas where decontamination units rest on carpet flooring, contractor shall place an additional basin beneath the shower unit to prevent water damage to wood or carpet flooring. Ensure that all hose and hose fittings do not leak.**
 - 4. Damp wipe all surfaces twice after each shift change with a disinfectant solution.
 - 5. Provide hot and cold water, drainage and standard fixtures including an elevated shower head as necessary for a complete and operable shower. A water hose and bucket is not an acceptable shower.

6. Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or outside of the work area.
7. Pump shower waste water to drain. Provide 20 micron and 5 micron waste water filters in line to drain. Change filters daily or more often if necessary.
8. If the decontamination area is located within an area containing friable asbestos on overhead ceilings, ducts, piping, etc., provide the area with a minimum 5/8 inch plywood "ceiling" with two layers of polyethylene sheeting covering the top of the "ceiling."
9. Visual Barrier: Where the decontamination area is immediately adjacent to and within view of occupied areas or the exterior of the building, provide a visual barrier of opaque plastic sheeting so that worker privacy is maintained and work procedures are not visible to building occupants. Where the area adjacent to the decontamination area is accessible to the public, construct a solid barrier on the public side of the sheeting to protect the sheeting. Construct barrier with wood or metal studs, max. 16 inches on center, covered with minimum 5/8 inch fire treated plywood.

B. Equipment Decontamination Units:

1. Provide an equipment decontamination unit consisting of a serial arrangement of rooms, clean room, holding area, and washroom, each room separated by a minimum of three curtain doorways, for removal of equipment and material from work area. Do not allow personnel to enter or exit work area through equipment decontamination unit.
2. Washroom: Provide washroom for cleaning of bagged or drummed asbestos-containing waste materials passed from the work area.
3. Holding Area: Provide holding area as a drop location for sealed drums and bagged asbestos-containing materials passed from the washroom.
4. Clean Room: Provide clean room to isolate the holding area from the building exterior or occupied areas.
5. Equipment or Material: Obtain all equipment or material from the work area through the equipment decontamination unit according to the following procedure:
 - a. When passing contaminated equipment, sealed plastic bags, drums or containers into the washroom, close all doorways of the equipment decontamination unit, other than the doorway between

the work area and the washroom. Keep all outside personnel clear of the equipment decontamination unit.

- b. Once inside the washroom, wet-clean the bags and/or equipment.
- c. When cleaning is complete, insert bagged material into a clean bag/drum during the pass between the washroom and holding area. Close all doorways except the doorway between the washroom and holding area.
- d. Workers from the building exterior enter the clean room then the holding area to remove decontaminated equipment and/or containers for disposal. Require these workers to wear full protective clothing and respiratory protection as described in Section 01562.
- e. Bagged material shall be placed in a buggy lined with 2 layers of six-mil polyethylene sheeting. Once buggy is full, drape one layer of six-mil polyethylene sheeting over waste in preparation for transport. Waste may be transported via an approved elevator to the on site enclosed dumpster.

C. Use of Elevator:

- 1. **Elevator use will be allowed on this project.**

D. Decontamination Unit Contamination:

- 1. If the air quality in the decontamination unit exceeds 0.01 fibers per cc analyzed by PCM or 70 structures per mm squared analyzed by TEM or its integrity is diminished through use as determined by the designer or industrial hygiene firm, no employee shall use the unit until corrective steps are taken and approved by the designer and industrial hygiene firm.

SECTION 01711

PROJECT DECONTAMINATION

1.01 GENERAL

- A. Carry out a first cleaning of all surfaces of the work area including plastic sheeting, tools, scaffolding and/or staging by use of damp-cleaning and mopping and/or a high efficiency particulate air (HEPA) filter vacuum until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces. Do not perform dry-dusting or dry-sweeping.
- B. Equipment shall be cleaned and all contaminated materials removed before removing polyethylene from the walls and floors.
- C. The contractor shall replace all prefilters and clean the inside and outside of the HEPA exhaust units.
- D. After polyethylene sheets have been removed from walls and floors, but are still remaining on all windows, doors and the critical components, the contractor shall clean all surfaces in the work area, including ducts, electrical conduits, steel beams, roof deck, etc., with amended water and/or HEPA-filtered vacuum.
- E. After cleaning the work area, the contractor shall allow the area to thoroughly dry and then wet-clean and/or HEPA vacuum all surfaces in work area again.
- F. At the completion of the cleaning operation, the contractor's supervisor shall perform a complete visual inspection of the work area to ensure that the work area is dust and fiber free. If the supervisor believes he is ready for a final project decontamination inspection, he shall notify the designer.
- G. The designer shall contact the industrial hygiene firm and advise the firm of the final project decontamination inspection requested by the contractor. Work area clearance is described in section 01714.
- H. Final project decontamination inspection includes the visual inspection and air monitoring clearance.
- I. Visual inspection for acceptance shall be performed after all areas are dry.
- J. The industrial hygiene firm shall perform the final visual inspection and conduct the final air clearance. Any discrepancies found shall be documented in the form of a punch list.
- K. Final air sampling shall not commence until the visual inspection is completed and passed.
- L. If the industrial hygiene firm or the designer finds that the work area has not been adequately decontaminated, cleaning and/or air monitoring shall be repeated at

the contractor's expense, including additional industrial hygiene fees, until the work area is in compliance.

- M. After the work area is found to be in compliance, all entrances and exits shall be unsealed and the plastic sheeting, tape and any other trash and debris shall be disposed of in sealable plastic bags (6 mil minimum) and disposed of as outlined in Section 02084.
- N. Contractor shall remove all polyethylene sheeting, tape, and any trash or debris after hours or on weekends.
- O. All HEPA unit intakes and exhausts shall be wrapped with six mil polyethylene before leaving the work area.
- P. After the industrial hygiene firm has approved the final project decontamination and the contractor has completed the tear down for occupancy by others, the designer shall perform the project final inspection as outlined in the general conditions.
- Q. Any residual asbestos that may be present after removing critical barriers, that in the designer's judgment should have been cleaned during the precleaning phase prior to installing critical barriers, shall be cleaned and cleared at the contractor's expense.
- R. There shall be appropriate seals totally enclosing the inspection area to keep it separate from clean areas or other areas where abatement is or will be in progress. Once an area has been accepted and passed air tests, loss of the critical barrier integrity or escape of asbestos into an already clean area shall void previous acceptance and tests. Additional visual and final air clearance sampling shall be required at the contractor's expense.

SECTION 01714

WORK AREA CLEARANCE

1.01 GENERAL

- A. Notification and scheduling of the final inspection during the project is the responsibility of the contractor.

1.02 FINAL CLEARANCE TESTING

- A. After the second cleaning operation and after the area is completely dry, the following procedure test shall be performed:
1. A final visual inspection shall be conducted by the industrial hygiene firm. The inspection shall be conducted following the guidelines set forth in the American Society for Testing and Materials, Standard Practices for Visual Inspection of Asbestos Abatement Projects, Designation: E1368.90. If the work area is found visibly clean, air samples will be collected by the industrial hygiene firm.
 2. During the air testing, the accredited air monitor shall cause disruptive air currents as described in the EPA-AHERA regulations (40 CFR Part 763, Subpart E, Appendix A).
 3. Final clearance samples are to be analyzed using PCM (minimum of five samples using NIOSH 7400 method). The maximum flow rate shall be 12 liters per minute, with a minimum sample size of 1200 liters for each sample. Clearance criteria shall be less than 0.01 f/cc for all samples analyzed. Alternate 1 - Clearance samples shall be analyzed by Transmission Electron Microscopy (TEM), using the Mandatory Transmission Electron Microscopy Method described in 40 CFR Part 763, Subpart E, Appendix F. Clearance criteria shall be an arithmetic mean less than or equal to 70 structures per square millimeter or a z-test less than or equal to 1.65. Clearance sample turn around shall be 24 hours after TEM samples are collected.

CONSTRUCTION AREA

Base Bid

CLEARANCE CRITERIA

TEM

4. The industrial hygiene firm shall immediately report the final air sampling clearance results to the designer.
5. The use of the negative pressure system may be discontinued after the industrial hygiene firm instructs the contractor that he has passed the final project decontamination inspection.

SECTION 02080

ASBESTOS REMOVAL

1.01 GENERAL

- A. Prior to starting asbestos removal, the contractor's equipment, work area and decontamination units will be inspected and approved by the designer.
- B. All loose asbestos material removed in the work area shall be adequately wet, bagged, sealed and labeled properly before personnel breaks or end of shift.
- C. All plastic sheeting, tape, cleaning material, clothing and all other disposable material or items used in the work area shall be packed into sealable plastic bags (6 mil minimum) and treated as contaminated material.
- D. All material shall be double-bagged.
- E. All excess water (except shower water) shall be combined with removed material or other absorptive material and properly disposed of as per EPA regulations. Contractor shall not place water in storm drains, onto lawns, or into ditches, creeks, streams, rivers or oceans.

1.02. SCOPE OF WORK

- A. Remove and dispose of approximately 5,700 Square Feet of asbestos-containing ceiling texture from plaster substrate where shown on the first floor.
- B. Remove and dispose of approximately 871 Square Feet asbestos-containing ceiling texture from plaster substrate, and approximately 871 Square Feet of asbestos-containing floor tile and floor tile mastic where shown on the second floor.
- C. Remove and dispose of approximately 871 Square Feet asbestos-containing ceiling texture from plaster substrate, and approximately 871 Square Feet of asbestos-containing floor tile and floor tile mastic where shown on the third floor.
- D. Remove and dispose of asbestos-containing mudded pipe fittings and end caps (approximately 30 fittings) and approximately 30 Square Feet of asbestos-containing ceiling texture from mechanical room.
- E. Remove and dispose of 20 windows with asbestos-containing window glazing. Coordinate window removal with onsite GC to cover window openings.
- F. Contractor shall remove old lights and ductwork where necessary to access and abate asbestos-containing ceiling texture. Contractor shall clean and store lights for reuse. Conduit shall be unscrewed to allow access to underlying ceiling texture. Secure conduit to ceiling when cleaning is complete. Remove partition walls where shown on the drawings to access and remove underlying asbestos-containing ceiling texture.

1.03 ACM PRODUCTS TO BE REMOVED

A. Asbestos-Containing Ceiling Texture and Mudded Pipe Fittings

1. Spray asbestos-containing ceiling texture with a fine mist of amended water prior to removal procedures. Do not over saturate to cause excess dripping. Mist asbestos-containing materials continuously during the removal process.
2. Contractor shall carefully remove manageable sections of asbestos-containing ceiling texture and place it directly into bags for disposal. Do not allow asbestos debris to accumulate on floor.
3. Contractor shall continue misting asbestos-containing materials with amended water throughout the removal process.
4. Contractor shall take all precautions necessary not to allow asbestos-containing material to free fall to the floor. Asbestos-containing materials may not free fall more than ten feet.
5. Clean work area as required by section 01711.

B. Asbestos-containing Floor Tile and Mastic

1. Contractor shall mist asbestos-containing floor tile with a fine mist of amended water. Continue misting asbestos-containing floor tile throughout the removal process.
2. Once asbestos-containing materials are adequately wet, contractor shall remove manageable sections, and place directly into appropriate bags for disposal. Contractor shall remove asbestos-containing floor tile using methods that minimize breakage. Contractor shall not allow asbestos-containing materials to accumulate on floor.
3. Remove and dispose of cove base.
4. Contractor shall use a "low" to "no" odor solvent such as Twin Chemical Extra Man low odor solvent or equivalent for removal of asbestos-containing flooring mastic. Solvent shall be neutralized per manufacturer direction prior to new flooring installation. Coordination between the abatement contractor and flooring contractor shall be made in order to ensure compatibility of the mastic removal solvent with new flooring adhesive.
5. Contractor shall clean work area as specified in section 01711.

C. Non-Friable, Non-Regulated Removal of Asbestos-Containing Window Glazing:

1. Asbestos abatement contractor shall isolate the work area utilizing appropriate barrier tape and signage.
2. Contractor shall install 6-mil polyethylene sheeting on ground at the foundation of the structure. Drop cloth sheeting shall cover a sufficient area to keep debris from window removal from coming in contact with the soil or concrete.
3. Asbestos abatement contractor shall apply duct tape or equal to secure window glazing in place during window removal.
4. Following window removal, asbestos abatement contractor shall immediately wrap and label windows for appropriate disposal. Contractor shall use a "low" to "no" odor solvent such as Twin Chemical Extra Man low odor solvent or equivalent for removal of asbestos-containing flooring mastic. Solvent shall be neutralized per manufacturer direction prior to new flooring installation. Coordination between the abatement contractor and flooring contractor shall be made in order to ensure compatibility of the mastic removal solvent with new flooring adhesive.
5. Asbestos abatement contractor shall seal window opening following abatement operations with plywood until replacement window is installed.
6. Contractor shall clean work areas in preparation for final visual inspection.

SECTION 02084

DISPOSAL OF ASBESTOS-CONTAINING WASTE MATERIAL

1.01 GENERAL

- A. All asbestos materials and miscellaneous asbestos contaminated debris shall be properly sealed and protected, and the loadout vehicle/dumpster shall be locked, while located on the facility site and then transported to a predesignated disposal site in accordance with 40 CFR 61.150 and DOT 49 CFR Parts 100-399.
- B. An enclosed vehicle will be used to haul waste material to the disposal site. No rental vehicles or trailers shall be used. Vehicle selection, vehicle covers and work practices shall assure that no asbestos becomes airborne during the loading, transport and unloading activity, and that material is placed in the waste site without breaking any seals.
- C. Waste disposal polyethylene bags (6 mil) and containers, non-porous (steel/plastic) drums or equivalent, with labels, appropriate for storing asbestos waste during transportation to the disposal site shall be used. In addition to the OSHA labeling requirements, all containers shall be labeled with the name of the waste generator and the location at which the waste was generated.
- D. The contractor shall transport the containers and bags of waste material to the approved waste disposal site. The sealed plastic bags shall be placed into the burial site unless the bags have been broken or damaged. Upon the landfill's approval damaged bags shall be left in the non-porous containers and the entire contaminated package shall be buried.
- E. Workers loading and unloading the asbestos will wear respirators and disposable clothing when handling material. Asbestos warning signs shall be posted during loading and unloading of asbestos waste.
- F. The contractor shall use the HHCU's Waste Shipment Record for disposal records as per 40 CFR 61.150 and distribute a copy of all waste shipment records to the designer and the HHCU after the completion of the project.

APPENDIX A

PREWORK ASBESTOS INSPECTION CHECKLIST

Name of State Facility: _____

Project Name: _____

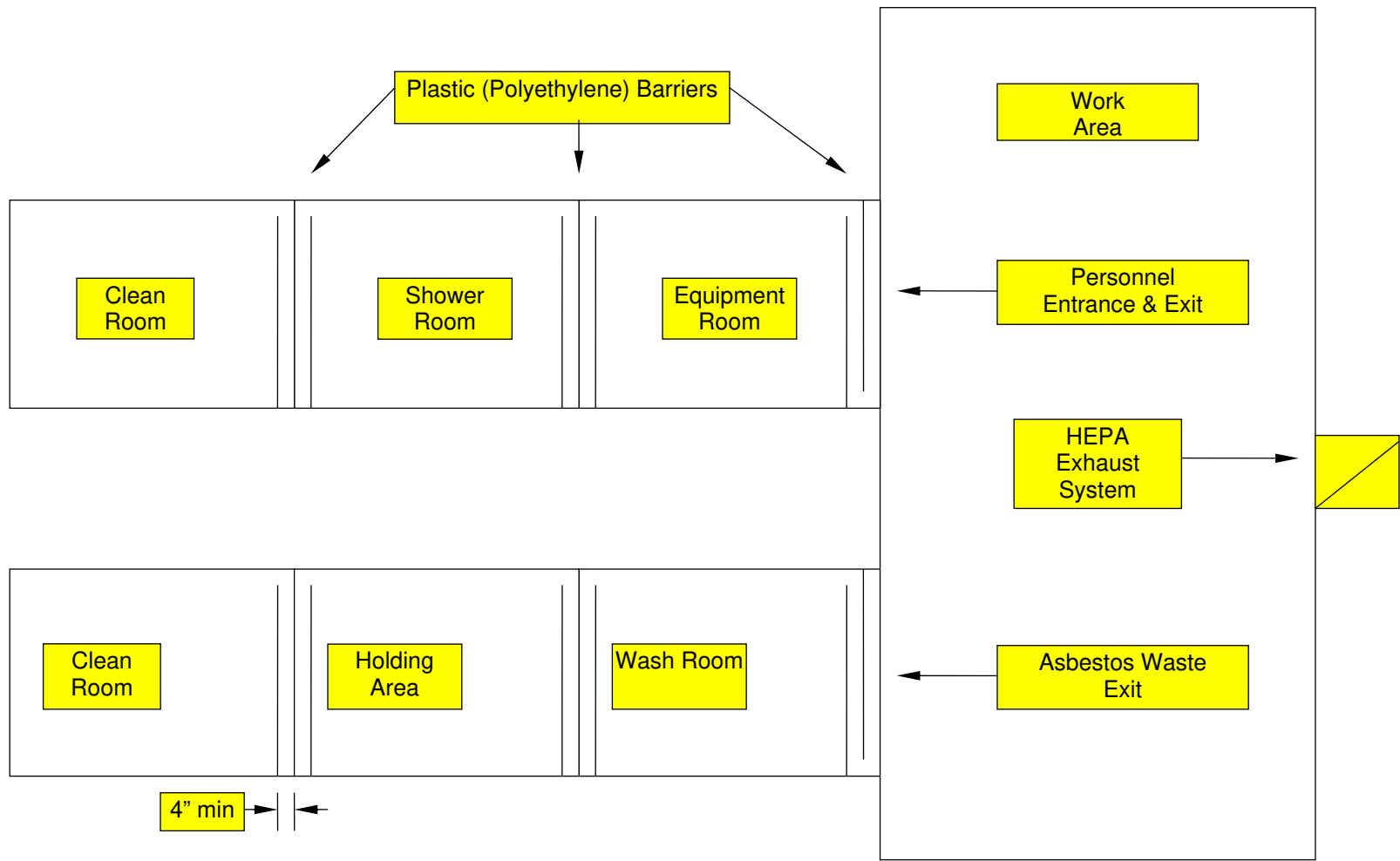
Project ID Number: _____

Date of Inspection: _____ Pass: _____ Fail: _____

A.	DOCUMENTS	YES	NO
1)	Asbestos Removal Permit/NESHAP Notification	_____	_____
2)	Accreditation Documents for Workers & Supervisors	_____	_____
3)	Asbestos Plans and Specifications	_____	_____
4)	Air Monitoring Data	_____	_____
5)	Waste Shipment Records	_____	_____
6)	Sign-in Sheets and Bound Book for Comments	_____	_____
7)	Calibration Record for Grade "D" Air	_____	_____
8)	Items listed in Section 01043 of Specification	_____	_____
B.	PPE SUPPLIES		
1)	Tyvek Clothing	_____	_____
2)	Rubber Boots	_____	_____
3)	Respirators with HEPA Filters	_____	_____
C.	CLEAN ROOM		
1)	Entry Curtains	_____	_____
2)	Emergency Phone Numbers Posted	_____	_____
3)	First Aid Kit	_____	_____
4)	Asbestos Signs	_____	_____
5)	Decontamination Procedures Posted	_____	_____
6)	Fire Extinguisher	_____	_____
D.	SHOWER ROOM		
1)	Polyethylene Curtains	_____	_____
2)	Hot/Cold Water & Operational	_____	_____
3)	Soap & Towels	_____	_____
4)	Waste Water Filter Pump Operational	_____	_____
5)	Extra Five Micron Size Filters	_____	_____
6)	Filtered Waste Water to Sanitary Sewer	_____	_____

E. WORK AREA	YES	NO
1) Removable Items Out of Area	_____	_____
2) Non-removable Items Protected	_____	_____
3) Critical Barriers Installed	_____	_____
4) Polyethylene Curtains	_____	_____
5) Polyethylene on Walls/Floors as Specified	_____	_____
6) HVAC off	_____	_____
7) Air Filtration Devices in Place and Operational	_____	_____
8) Air Exhausted to Outside	_____	_____
9) Electricity Locked and Tagged Out	_____	_____
10) Temporary Power Installed with GFCI	_____	_____
11) Fire Extinguishers	_____	_____
12) Emergency and Fire Exits Marked	_____	_____
13) Audible Alarms Operational	_____	_____
14) Toilet Available	_____	_____
F. EQUIPMENT		
1) Safety Equipment	_____	_____
2) HEPA Vacuums	_____	_____
3) Waste Disposal Bags	_____	_____
4) Airless Sprayer with Water Source	_____	_____
5) Cleaning Equipment	_____	_____
6) Glove Bags	_____	_____
7) Emergency Power Generator (if required)	_____	_____
8) Temporary Lighting	_____	_____
G. OTHER		
1) _____	_____	_____
2) _____	_____	_____
3) _____	_____	_____
4) _____	_____	_____

<i>Asbestos Design Consultant</i>	<i>Date</i>
<i>Asbestos Contractor's Representative</i>	<i>Date</i>



Decontamination Area Arrangement - Plan View

Drawn By:
GAD

Date:
01/02/96

N.C. Department of Administration
State Construction Office
Raleigh, N.C. 27601

Brooks Hall

Building No. 011



FACILITY CONDITION ASSESSMENT PROGRAM

November 2013

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FCAP Group Information

DATE OF INITIAL INSPECTION: **October 2013**

INSPECTION TEAM PERSONNEL:

Scott Crowder	Electrical Inspector
Kevin Alan Cummings	Architectural Systems Analyst
Joe Riley	Mechanical Inspector
Kevin Ingalls	Program Manager

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SECTION 1 – BUILDING CONDITION SUMMARY

Overview

The stately masonry building facing east and overlooking Pullen Park was erected in 1926 as the home of the young college's DH Hill Library. It was designed by NYC architect Hobart Upjohn, who also designed Page and Peele Halls, the 1928 Chancellor's Residence, Bagwell, Becton, Berry, Syme, Gold, and Welch Residence Halls, and Thompson Gymnasium (now Theater). The careful proportioning and expensive materials of the neoclassical facade handsomely conveyed an image of refinement, prestige, and tradition. The alignment of its east-west axis with the 1913 YMCA building created a park-like courtyard between the two structures.



DH Hill library, circa 1926



The reading room prior to 1953

By 1953, the university's post-war enrollment growth had necessitated a larger library facility, and the current DH Hill building was constructed, facing onto Hillsborough Street. The former library building was converted to offices and studios for the growing School of Architecture, and the building was re-named to honor Eugene Clyde Brooks, who had served as president of NC State from 1923 to 1935. The former reading room today houses the Harrye B. Lyons Design Library, containing in addition to its printed materials more than 63,000 digital images covering architecture, art and design. The image collection also has over 80,000 35mm slides.

The international reputation of the mid-century School (now College) of Design demanded immediate expansion of its capacity, and a three-story stylistically contrasting modern wing was completed at the north end in 1956 (the School of Design Addition, or SODA). Today, it is known as The Matsumoto Wing, honoring the legacy of its designer, former faculty member George Matsumoto (with F. Carter Williams). The open-air connecting breezeway features both floor tiles and vertical panels of richly veined Georgia marble, blending the two structures. This steel-framed wing houses project shop and studio facilities, and administrative and faculty offices. An elevator was added to the breezeway in 1996, serving all levels.

A second wing was added to the south end of Brooks Hall in 1965, designed by Cameron and Associates of Charlotte; this more functional reinforced concrete structure today contains additional classroom and studio space, modern computer labs, and faculty offices. The relatively windowless facades of the first two floors serve the current computer-intensive design occupants well, as does the curtainwall vista at the third floor's open studio space. Mezzanine-level offices were created in the library reading room at this time.

Today, these three bays of Brooks Hall and their connecting breezeways contain over 77,500 SF of finished space. The YMCA building was demolished in 1975 for yet another expansion of the College of Design; Kamphoefner Hall, completed in 1978, today serves as the western wall of the original enclosed courtyard.



L-R: 1965 South Wing, 1926 Central Library Bay, 1956 Matsumoto (North) Wing

Fire / Life Safety

The building's fire alarm functions, which include smoke, heat, beam, and duct detectors, horn/strobes, magnetic door holders, pull stations, and a Silent Knight model 5107 digital communicator, are overseen by an aging Honeywell panel, model FS90. The FS90 is no longer manufactured by Honeywell, and replacement parts will become increasingly difficult to find as the years pass. In addition to this obsolescence, the panel is a zoned unit and should be addressable to meet current University guidelines. It was installed in 1992 and so is nearly 22 years old. It is operating seven years past the end of its effective service life. This assessment calls for its replacement in the next 1-3 years.

Despite the presence of numerous handheld fire extinguishers, the building is not protected by a sprinkler system, but should be to more effectively protect occupants and property. This assessment calls for the installation of a sprinkler system in the next one to three years.

There is no generator back-up for the electrical system. In the case of a power outage, egress lighting and the fire alarm panel are provided with batteries for emergency power. This assessment makes no recommendations for the installation of a generator at this time.



Silent Knight digital alarm communicator



Aging incandescent exit sign



Honeywell FS90 fire alarm control panel



Horn/strobe for alarm notification

Health

There are several areas within the building that have been identified as containing asbestos materials. Professional Service Industries, Inc. performed a survey inspection on April 15-16, 1997; the bulk of ACM identified is rough plaster, floor tile and mastic, and thermal system insulation (TSI), located throughout the building. Numerous areas of asbestos-containing floor tile and mastic are located below currently carpeted areas. TSI (both pipe fitting insulation and pipe insulation) was found throughout the first floor area and is assumed to be present on the second and third floors as well. Pipe chases were inaccessible. The rigid block pipe insulation identified as ACM (HGA-06), is part of the steam heat system that connects to all radiators. The rough plaster identified as an ACM is present throughout the building in a large number of rooms. Asbestos was banned from use in new construction in 1989; the ACM identified in this survey was assessed as being in good condition at the time of the survey. It is expected that as any building renovations occur, there will be disturbances of the in-place asbestos-containing materials. Federal regulations require that asbestos-containing materials, if impacted by renovation, be removed prior to disturbance by accredited personnel. This project addresses the additional costs incurred during typical renovation as asbestos is discovered and remediated.

It is unknown whether testing has been conducted for lead-based paint (banned in 1978) or other once-common construction materials that are banned today. Further testing is recommended prior to any renovation. See projects in Sections 2 and 3.



The 1997 PSI report identifies numerous instances of asbestos-containing materials, including floor tile and mastic, and pipe insulation.

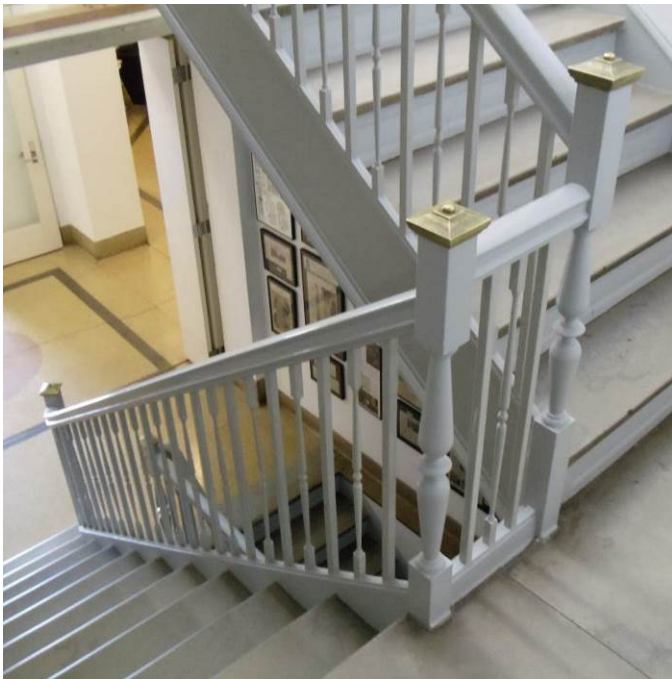
Accessibility

Americans with Disabilities (ADA) legislation became law in 1991. All three sections of the current Brooks Hall were designed and constructed prior to the current cultural awareness and construction standards that accommodate those with physical handicaps. Although many updates have been implemented through the years, challenges remain. The three generations of enclosed spaces are arranged along a gently sloping site, and floor-to-floor heights are not consistent; a series of ramps built within the original library building and an elevator added at the north breezeway today provide much-improved access to all areas of the facility.



Internal adaptations: ramps at lower levels (L) and upper levels (R)

Toilet rooms have been adapted to provide accessible facilities at the ground floor, but those at upper floors remain in their original configuration. Drinking fountains are generally single-level models. Stairwells retain their outdated handrail designs, and some doors retain knob-style hardware. See projects in sections 2 and 3.



Examples of ADA non-compliance: hand rails that do not transition smoothly from one level to the next, and an obsolete design single-height drinking fountain.



Adaptations at some toilet facilities include the addition of handrails and a reduction in the number of fixtures in order to increase the floor area allowance at the remaining fixtures. Note awkward placement of toilet tissue dispenser, uninsulated piping below lavatory and that placement of freestanding trash receptacle intrudes upon floor clearance.



Other toilet and break area facilities remain in their original location and per now-obsolete design

Exterior Systems

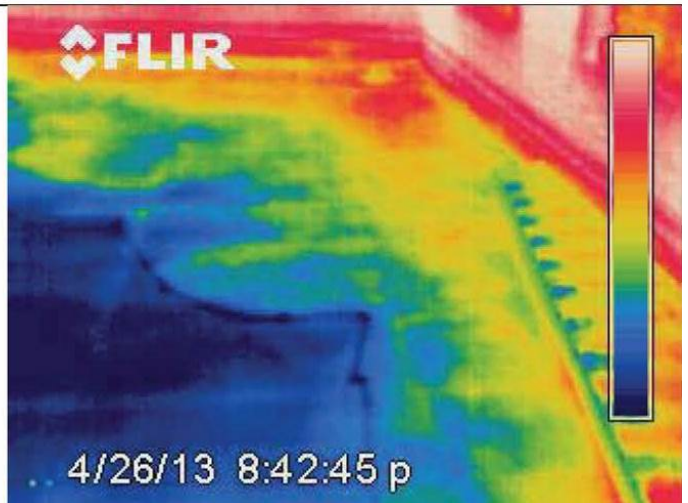
Materials and conditions vary at each sector of the complex's rooftops. The original center section is distinguished by a metal-clad dome; the same cladding material is seen at the east-facing pediment and is in very good condition. Recent infrared testing reveals widespread moisture infiltration beneath the EPDM membrane at all sectors, especially where the shrinking membrane has pulled away from the parapets and where large areas of ponding are observed. Separations at the perimeter have been repeatedly caulked and at this point are holding. Much of the perimeter flashings have been repaired or replaced over the years.

At the north wing, the roof is accessed through a hatch added to the breezeway stairwell 1988. This is the only section of roof where the membrane is not exposed, but is covered in LG board, an insulating product; these panels have an abrasive, cementitious covering, and over the years the covering has crumbled, and now falls down in between the panels themselves, many of which are cracked and broken. This abrasive then rubs and wears on the membrane beneath. In addition to this deterioration, vegetation has taken root in the open spaces in between, highlighting the fact that these panels hold moisture that should evaporate into the air. It is recommended to remove the LG boards, the existing membrane, and any water-damaged rigid insulation beneath, and install a new roofing system. It is recommended to replace the roof of the north wing and all sectors of the original library except the metal-clad dome and portico. See projects in sections 2 and 3.

At the south wing, a shallow, canted, standing-seam copper fascia encircles the outer perimeter of the flat roof above a continuous curtainwall of plate glass, affording deep daylight penetration into the open studio below. Concealed behind the fascia is a flat roof, in fair condition today, although extensive ponding is observed.



Broken LG boards at north wing (L), ponding at south wing (R)



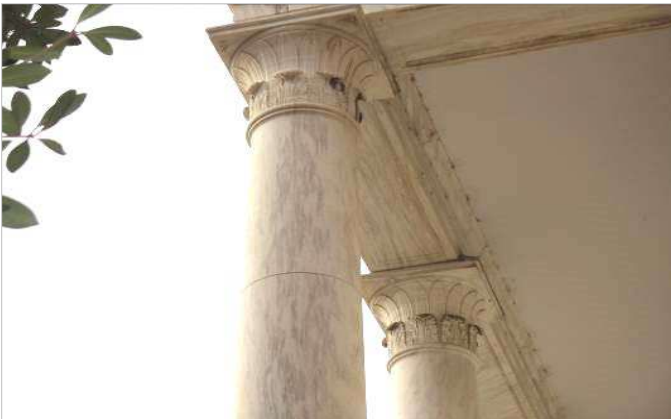
Stretched membrane at center block, painted line indicates extent of water infiltration and damaged insulation beneath membrane (L) confirmed by infrared testing (R)

In addition to the oculus of the rotunda, seven skylights are located on the roof, covered with copper-framed wire-reinforced glass constructions for protection. The coverings are in uniformly poor condition; drip edges are deteriorating and numerous panes of glass are cracked. All of the skylights are very dirty, and should be cleaned both inside and out to remove insects and dirt.



Broken wire-glass at rooftop, broken glass and dirt at ceiling plane of skylight and at oculus

Mortar on the exterior of the masonry building suffers from visible shrinkage and deterioration at certain areas, typical for a building of this age. A decorative parapet at the perimeter of the roof is composed of brick punctuated by panels of marble balusters; the balusters and cornice below exhibit a great deal of dirt and vegetation growth. Separation of the parapet construction from the body of the load-bearing mass is indicative of moisture intrusion and freeze-thaw damage; the entire parapet needs careful inspection, pointing, pressure washing, and sealing before irreparable harm comes to the porous marble. The east-facing portico features dramatic marble columns and capitals. The columns, capitals, and frieze appear to be in good condition generally, but need cleaning and sealing as by qualified professionals. See projects in sections 2 and 3.



Marble columns, capitals, and frieze at portico are in very good condition



Marble accents and cornice at parapet; note stains and mortar loss



Similar brick and marble materials at the connecting breezeway unite the 1953 north addition with the original 1926 library building

Most of the masonry mass is in very good condition as it nears the century mark. Some mortar loss is to be expected, as is some loss of the structural brick itself (note spalling and cracking of brick). It is recommended to inspect, clean, point as needed, and seal all masonry, including the marble window and door surrounds, to prevent further freeze-thaw damage. See projects in sections 2 and 3.



Windows in the central bay are single-pane glass in painted steel frames, most of which are inoperable and many of which do not completely close. It is recommended to replace all glazing with double-pane glass in prefinished aluminum frames, replicating the original design, or to add an insulating panel as was done at the south-facing high windows in the rotunda restoration project. See projects in sections 2 and 3.



Typical single-glaze steel-framed window (L) and insulating panel at second floor (R)



The arched upper portions of the west-facing reading room's windows were removed and infilled with brick



Clear and spandrel glazing at the north addition is single-pane throughout

Mechanical Systems

The main cooling system of Brooks Hall includes a Carrier® centrifugal chiller; this unit was manufactured in November of 2011. The chiller is a water-cooled unit; it has a nominal tonnage of 103 and a 20-year effective service life; it is only two years old as of this writing. The system uses an R-134a refrigerant. Though the chiller is relatively new and still in excellent condition, it is recommended to tie this building into the campus chilled water loop, a project that has been planned for several years now. Chilled water is supplied by a 15HP chilled water supply pump and a 10HP condenser pump.



Carrier chiller to left, float switch and water feed for cooling tower to right.

The existing Marley® cooling tower has a 110 ton capacity; it is 16 years old and already in very poor condition.

Brooks Hall is connected to the campus central steam loop; this steam serves a converter for hot water delivery to the fan coil units and air handling units. Eighteen fan coil units averaging 1.8 tons per unit can be found throughout the north wing of the building. The units were installed in 1982 (31 years old) and are still in operation long past the end of their effective service lives of 15-20 years. Additional heating is supplied by cast iron radiators located in various rooms throughout the wing.



Steam converter, above; one of eighteen fan coil units, top right; antiquated cast iron steam radiator, bottom right.

The Rotunda 201, Galleries 202, 203, and Corridor 205 are heated and cooled by AHU-2. AHU-2 is 12 ton, 3,900 CFM DX unit with a roof mounted condensing unit. Heating coils for the AHU are hot water supplied by the heat steam-to-hot water convertor. The condensing unit was recently replaced in 2008 (5 years old) in fair condition and well within its effective service life of 15 years. The air handler was installed during a 1988 renovation making the unit 25 years old with an effective service life of 20 years.



**Condensing unit for AHU-2,
above; AHU-2 right.**



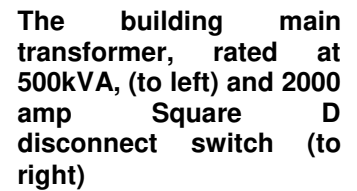
The central building has three built-up air handling units delivering air to diffusers throughout the structure. Unit No. 1 is a 5345 CFM unit equipped with chill water and hot water coils. Unit No. 2 is a 2412 CFM unit equipped with chill water and hot water coils. Unit No. 3 is a 1600 CFM unit equipped with chill water and hot water coils. All three air handling units were installed during an addition and alterations project in 1964 making the units almost 50 years old. The average effective service life of indoor air handling units is 15-20 years.

Currently, Brooks Hall has no automation for HVAC controls. The system is of pneumatic design and manually controlled. Control supply air is provided by an Ingersoll Rand® instrument air compressor with two 5.0 HP motors. A project recommending that the current control system be updated to the Direct Digital Control (DDC) automation which will permit remote monitoring and control of the building's HVAC system is included in the comprehensive renovation project in sections 2 and 3 of this report.



Due to the overall age and energy efficiency of the current system, a complete redesign and renovation of the HVAC system is recommended. Demolish and dispose of existing equipment. Install a new modern HVAC system with variable air volume and constant volume air distribution as needed. This includes new air handlers, ductwork, terminal units, heat exchangers, pumps, piping, controls, and electrical connections. Specify direct digital controls for the new equipment. Incorporate variable frequency drives into the new HVAC design as applicable. See Sections 2 and 3 for project.

General exhaust for the building consists of various fans serving the mechanical rooms and bathrooms. The exhaust system exhibits extreme wear due to the age of the system, installed in 1987 and now 25 years old. Average effective service life of rooftop exhaust components is approximately 20 years; a project recommending to replace/repair the exhaust fans and associated ductwork as needed is included at the end of this report.



Power for Brooks Hall comes from a 500 kVA transformer deriving a 208 volt secondary from the campus 12,470 volt loop. It enters the building through a 2000 amp disconnect switch mounted adjacent to the transformer. From the disconnect, it runs through main distribution section MS located in room 110. Five MLO (main lug only) load centers and a 1000 amp distribution panel (DP) are fed from DS; seven more MLO panels are fed from DP, several more load centers are sub-fed from these. This Square D equipment was installed in 1999 and is nearly fifteen years old, but is still in good condition. Not all load centers were replaced, however; there are still a number of aging panels in operation throughout the building, approximately six in number. These panels (GA, GR, 1A, 2A, B, and R) are of unknown age, but are almost certainly in operation past the end of their effective service lives.

T8 lighting located in Design library

Many of the building's lights have been changed to T8 technology over the years, but most lamps appear to be operating at 32 watts instead of today's University norm of 25 watts; according to NCSU's Energy Management Office, the 25 watt lamp is 20% more efficient than the 32 watt variety. In addition to this inefficiency, the fixtures in which lamps and ballasts are housed vary in styles and ages, from surface-mounted hinge-lensed units to antiquated parabolic fixtures. All interior lighting, approximately 790 two-by-four fixtures, should be replaced to maximize energy efficiency and for homogeneity of style.



Examples of some of the different styles of lighting to be found within the building

Many areas in the building would benefit from more precise lighting controls. In the larger studios, the installation of additional switches to control smaller sections of fixtures would improve control and could provide significant savings. Several restrooms were found to be controlled by a single keyed switch, meaning that, even if so inclined, restroom-goers are unable to turn the lights of behind them; Housekeeping would have to turn lights on and off every morning and evening, and most likely this doesn't happen.



A keyed switch, one of several to be found in restrooms. Switch cannot be operated without key, meaning lights cannot easily be turned on or off.

Incandescent flood lights in the first floor hallway. Artwork is displayed in this hallway on a regular basis, but the lamps need to be replaced with something more energy efficient.



Interior Systems

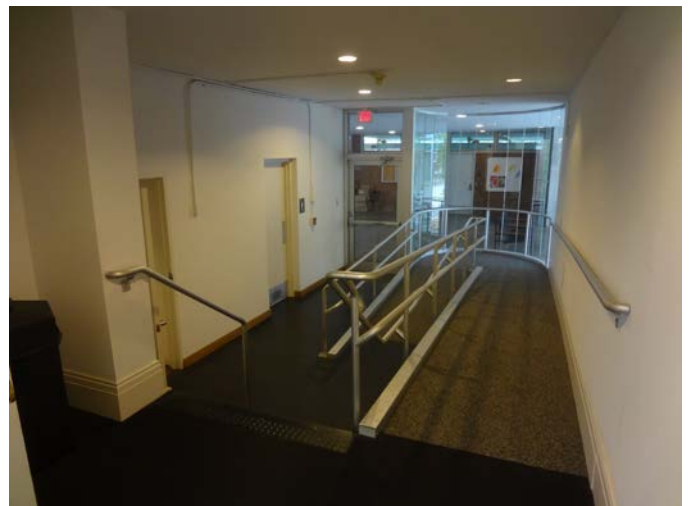


The central lobby and second floor gallery space – Lyons Library is beyond

The entrance lobby was originally flooded with daylight, as it was open to the oculus above. The ceiling/floor assembly we see today was installed to provide additional floor space to the new usage of the building in 1953. The rotunda and surrounding gallery space at the uppermost floor were renovated to their current appearance in 1988, designed by O'Dell Associates of Charlotte. Damaged plaster and classical moldings were repaired and skylights were repaired or replaced, including the oculus and the four *œil de boeuf* windows that had been previously boarded over with plywood.

The center-bay lobby and the immediately adjacent office suites appear today much as when they were designed and renovated in 1976. Period transoms and doors were removed and large glass panels were installed to segregate discrete spaces as well as to maintain a sense of openness, and much of the oak-clad partial-height partitioning remains. The original terrazzo floors have been covered over with carpet or vinyl tile except at the lobby, where the patterned floor and its precast terrazzo base remain, although damaged by settlement resulting in large east-west and north-south cracks. Terrazzo restoration is recommended.

Interior walls in the lobby are finished in plaster over the structural masonry, scored to emulate stacked block, and the marble triglyphs of the entry portico are repeated here in plaster. The walls of this room are in very good condition, as also found in most offices and classrooms. Most other wall surfaces in public spaces (corridors, studios, and shops) have not fared as well, as the nature of its usage demands work and display space; many wall surfaces are riddled with staple, tape, and push-pin scars. Periodic maintenance and routine repainting cycles appear to be adequate in all spaces throughout the interior of the complex.



Today, the central block and its north and south wings flow seamlessly at the second level, although the reduction in ceiling height is noticeable. The original short flights of steps that connected the original structure at the ground and top floors have today been replaced by ADA-compliant ramps.

In the north wing, interior walls of painted CMU and GWB are in fair condition. Most spaces in this wing are used for independent study or private offices, are therefore secured 24/7, and can only be entered via cypher-locked doors. Most finish materials are in fairly good condition, considering the usage of the facility.



Modern computer graphics lab (L) and conventional design studio (R)



Two-story former sculpture studio (L) and daylighted second floor design studio (R)

Similar conditions are observed at the south wing, although these spaces are noticeably cleaner, as computer graphics teaching facilities differ greatly from conventional design studios. A double-height studio space at the northwest corner of this wing is served by an overhead door which opens onto the courtyard. Its upper spaces are visible from adjacent second-floor studios through interior glass walls. A second overhead door has been removed, and that interior space now contains mechanical equipment.

Ceiling systems vary throughout the structure and include hard ceilings and drop-in acoustical tiles. All are in fair condition and routine maintenance appears to be adequate; however, it is recommended that all suspended ceiling materials over five years old should be replaced, in conjunction with the recommended sprinkler installation project. See projects in sections 2 and 3.

The design library retains much of the detail of the original reading room, despite the insertion of a mezzanine level which provided much-needed office space at one time. The elaborate plasterwork is threatened by roof leaks and water intrusion, which also could damage the valuable collections housed in this space. It should be noted again that the plaster in this building has been identified as an asbestos-containing material, which is becoming friable in this state of deterioration. Repairs are recommended following the replacement of the roof. See projects in sections 2 and 3.



Office mezzanine and original skylights (L), contemporary oak shelving and plaster ceiling medallions (R)



Water damage at plaster ceiling and molding in Design Library

The “restored” rotunda is fully accessible. White-painted walls are lined with tackable panels and the space is frequently used for exhibitions, charettes, and portfolio presentations. Minor water damage is observed at the dome, walls and doors are in good condition, and the adjacent wood floors and steps are in fair condition. It is recommended to remove the existing level-loop carpet and dated cut-pile border and provide a wood, engineered wood, or wood-look premium vinyl plank floor in this versatile space so that a washable surface can be better maintained. See projects in sections 2 and 3.



The restored dome of the Rotunda



1989 dedication plaque (L) and stained carpet (R) at the Rotunda

Plumbing Systems

Brooks Hall domestic cold and hot water need is served by copper supply lines and is not provided with backflow protection. A project recommending the installation of a backflow preventer is included in a comprehensive renovation project for the plumbing system. The domestic hot water supply for the building is generated by one AO Smith® 80 gallon electric water heater (DHW-1) equipped with one (3) GPM recirculation pump. Additional domestic hot water needs is provided by one (6) gallon water heater serving a break room and additional classrooms.



DHW-2



**DHW-1 and
recirculation pump**



The majority of the visible plumbing systems appear to be beyond their effective service life. As reported by zone technicians, the plumbing system is constantly backing up and leaks are constant. A complete plumbing renovation is recommended. According to a 1997 asbestos survey, much of the plumbing was observed to have asbestos insulation. Remediation of the asbestos containing insulation is required before replacement. A project for remediation is included in sections 2 and 3 of this report.

Six toilet rooms for Brooks Hall contain eleven hand wash sinks, ten water closets, three urinals, and are not all low-flow fixtures. A project recommending replacement of the lavatory fixtures to accommodate low-flow requirements and ADA requirements is included in the comprehensive renovation project in sections 2 and 3 of this report.



**Antiquated hand wash sinks/fixtures
and uninsulated piping under**



**Non ADA compliant stall and non-low
flow toilet fixture**

Site

Brooks Hall is surrounded by mature trees and shrubs; many low beds are planted with ground cover and seasonal color, with larger trees located to the west. Window wells at the ground floor level along the Pullen Road sidewalk need to be kept clear of vegetation and debris. The Building Liaison and the Zone maintenance staff have expressed concern about stormwater infiltration and root encroachment at the foundation level. A periodic review of general conditions, weather events, and damage mitigation procedures is in order.



Leaves and debris in window well



Late 1960's Redwood screen at HVAC yard



Brick enclosure adjacent to south wing

A redwood enclosure at the HVAC service yard has deteriorated to a point where its structural integrity is questionable, and should be replaced with similar or more durable masonry construction to blend with the adjacent enclosures.

Terrazzo treads and concrete pan stairs in the breezeways both exhibit extensive damage from both normal wear and abuse. Isolated repairs have been made through the years, and some of this work is failing.

While not currently designated as one of NCSU's "Hallowed Places", the landscaped courtyard to the west of the central block of the building, between Brooks and Kamphoefner Halls, is nonetheless a popular spot where students and faculty members may relax, interact, and work informally. Brick sidewalks are generally in good order and well-maintained, despite some settling reported in the 2010 Kamphoefner Hall assessment. A recent draft risk assessment report prepared by the Protection Engineering Group recommends a review of general lighting and personal safety in this area (and others) with recommendations for improvements. The report is not yet finalized or available through AERES.

Vertical Transportation

The building's single elevator, located on the north-west side of the building, is a Dover unit, rated at 2500 pounds. It was installed in 1997. The interior of the cab has fared well over the years; the walls are finished in brushed stainless steel and the flooring is simple VCT, stained and dirty but otherwise in decent condition. In September of 2006, Vertical Transportation System Consultants (VDA) of Buford, GA said of the elevator after a comprehensive inspection: *Overall maintenance at this location is above average. With this continued level of maintenance, this elevator should easily provide another ten to fifteen years of reliable service.* At only seven years into a potential fifteen year period, this assessment will make no recommendations about the elevator at this time.

Interior elevator controls are ADA- compliant but the breezeway call-button has no Braille markings, a condition which should be rectified in the near future. A work order will be created for this issue.



Security Systems

The only security systems observed were found on individual door locks to certain rooms or studios, which use a push-button activation system. A security control panel was seen in a first floor mechanical room, but did not appear to be operational at the time of this inspection; most likely it was abandoned-in-place. A recent draft risk assessment report prepared by the Protection Engineering Group reviews personal safety in this area (and others) with recommendations for improvements. The report is not yet finalized or available through AERES, but has been forwarded to the Simple K team for review.

General Note

This report outlines deficiencies noted during visual inspection of the facility. Projects and cost estimations have been developed to address deficiencies and remediation needed over the ten year window of this assessment. Projects are intended to bring the facility to “like-new” condition per current standards and codes. Project costs represent only the correction of existing deficiencies as observed and the replacement of equipment anticipated to fail as it nears the end of its projected life cycle. Projects do not anticipate change to function or spatial layout of the facility. Project costs do not represent the cost of a complete facility renovation. Soft costs not represented may include but are not limited to demolition and disposal fees, telecommunications materials and installation, architectural or engineering design fees, changes in spatial assignments or programming requirements. Other costs not represented may include replacement of furnishings, relocation costs, or other costs or contingencies that could not be determined or projected from the available building information database or from visual inspection.

SECTION 2 - PROJECT SUMMARIES AND TOTALS

Projects by Category / System Code

Detailed Project Summary
Facility Condition Assessment
Category/System Code Update Report
011 : Brooks Hall

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fees	Actual Cost to Date	Remaining Cost
AC3F	011AC02	2	0	Upgrade Drinking Fountains	5,268	527	0	5,795
Totals for System Code: ACCESSIBILITY					5,268	527	0	5,795
EL4B	011EL01	2		Replace Interior Lighting	548,590	54,859	0	603,449
EL1B	011EL04	3		Upgrade Electrical Service	117,300	11,730	0	129,030
EL3B	011EL05	2		Electrical System Repairs	40,960	4,096	0	45,056
EL3B	011EL06	2		Replace Six Aging Electrical Panels	23,936	2,394	0	26,330
Totals for System Code: ELECTRICAL					730,786	73,079	0	803,865
ES5B	011ES10	3	0	Replace Windows	1,281,319	128,132	0	1,409,450
ES4A	011ES11	2	0	Clean and Repair Skylights	3,000	0	0	3,000
ES4B	011ES02	2	0	Roof Replacement	440,082	44,008	0	484,090
ES2B	011ES01	2	0	Clean, Point, Caulk, and Seal Exterior Masonry	97,727	9,773	0	107,500
Totals for System Code: EXTERIOR					1,822,128	181,913	0	2,004,040
FS2A	011FS02	2		Replace Fire Alarm System	200,582	20,058	0	220,640
FS3A	011FS03	2		Install Fire Sprinkler System	499,344	49,934	0	549,278
FS6A	011FS04	2	0	Install Safety Railing and Lightning Protection at Roof	75,141	7,514	0	82,655
Totals for System Code: FIRE/LIFE SAFETY					775,067	77,507	0	852,574
HE6B	011HE01	3	0	Asbestos Abatement	671,389	67,139	0	738,528
Totals for System Code: HEALTH					671,389	67,139	0	738,528
HV3A	011HV08	2	1	Comprehensive HVAC Sysytem Renovation	2,412,941	241,294	0	2,654,235
Totals for System Code: HVAC					2,412,941	241,294	0	2,654,235
IS2B	011IS02	2	0	Repair and Repaint Damaged Plaster Walls & Ceilings	6,900	690	0	7,590
IS1A	011IS03	2	0	Replace Carpet at Rotunda	17,700	0	0	17,700
IS1B	011IS04	2	0	Terrazzo Repairs at Lobby	3,000	0	0	3,000
Totals for System Code: INTERIOR/FINISH SYS.					27,600	690	0	28,290
PL1A	011PL01	2	1	Comprehensive plumbing renovation	755,882	75,588	0	831,470
Totals for System Code: PLUMBING					755,882	75,588	0	831,470
SI3A	011SI01	3	0	Replace Redwood HVAC Screening	3,000	0	0	3,000
Totals for System Code: SITE					3,000	0	0	3,000
Grand Total:					7,204,061	717,736	0	7,921,797

System Code by Priority Class Matrix

Detailed Project Totals
Facility Condition Assessment
System Code by Priority Class
011 : Brooks Hall

System Code	System Description	Priority Classes				Subtotal
		1	2	3	4	
AC	ACCESSIBILITY	0	5,795	0	0	5,795
EL	ELECTRICAL	0	674,835	129,030	0	803,865
ES	EXTERIOR	0	594,590	1,409,450	0	2,004,040
FS	FIRE/LIFE SAFETY	0	852,574	0	0	852,574
HE	HEALTH	0	0	738,528	0	738,528
HV	HVAC	0	2,654,235	0	0	2,654,235
IS	INTERIOR/FINISH SYS.	0	28,290	0	0	28,290
PL	PLUMBING	0	831,470	0	0	831,470
SI	SITE	0	0	3,000	0	3,000
TOTALS		\$0	\$5,641,789	\$2,280,008	\$0	\$7,921,797

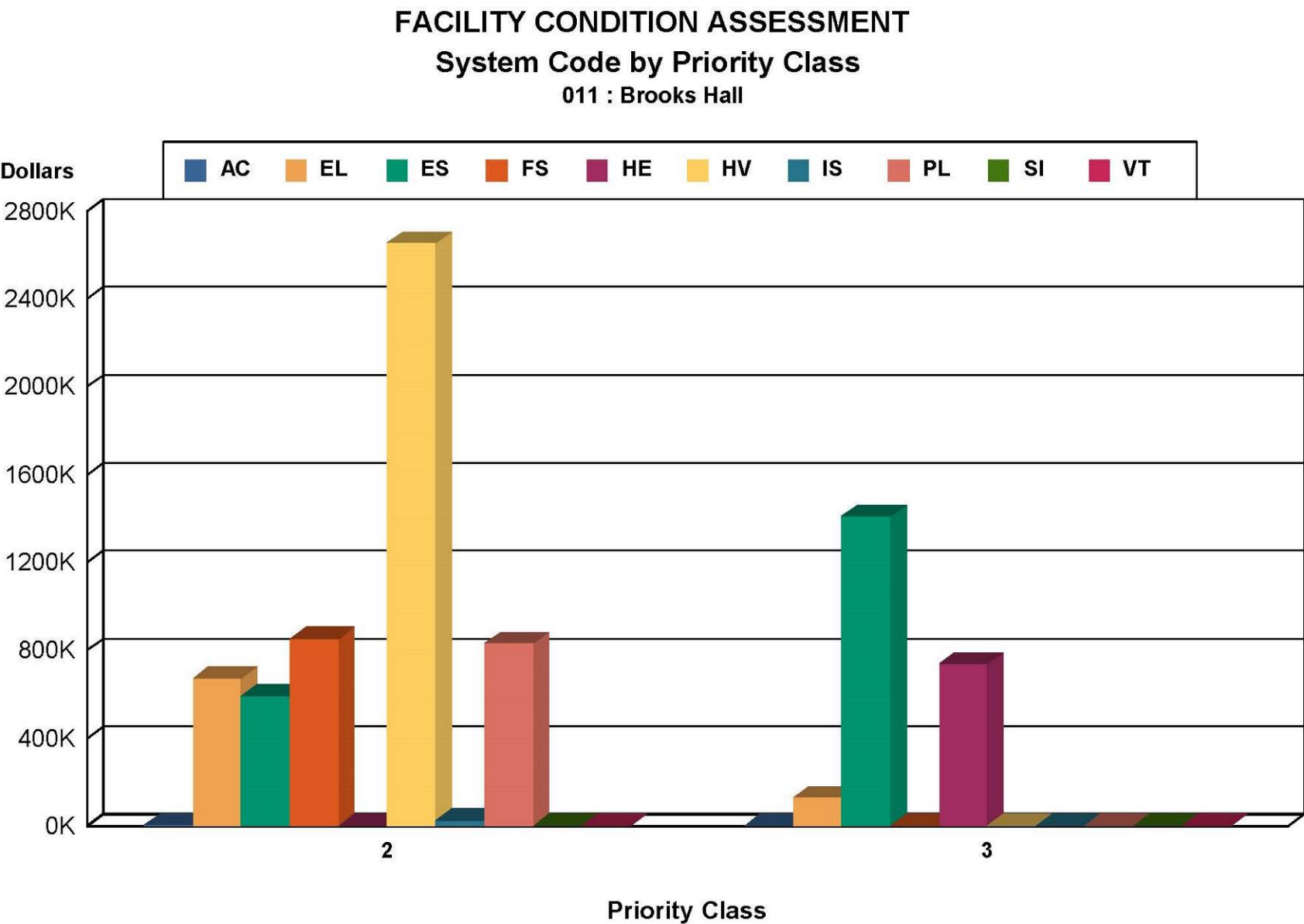
Current Replacement Value	\$28,791,663
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Facility Condition Needs Index	0.28
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Gross Square Feet	77,575
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Total Cost Per Square Foot	\$102.12
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System Code by Priority Class Graph



System Code by Project Class Matrix

Detailed Project Totals
 Facility Condition Assessment
 System Code by Project Class
 011 : Brooks Hall

System Code	System Description	Project Classes			Subtotal
		Capital Renewal	Deferred Maintenance	Plant Adaption	
AC	ACCESSIBILITY	0	5,795	0	5,795
EL	ELECTRICAL	129,030	674,835	0	803,865
ES	EXTERIOR	1,409,450	594,590	0	2,004,040
FS	FIRE/LIFE SAFETY	0	303,295	549,278	852,574
HE	HEALTH	0	0	738,528	738,528
HV	HVAC	0	2,654,235	0	2,654,235
IS	INTERIOR/FINISH SYS.	17,700	10,590	0	28,290
PL	PLUMBING	0	831,470	0	831,470
SI	SITE	0	3,000	0	3,000
TOTALS		\$1,556,180	\$5,077,810	\$1,287,806	\$7,921,797

Current Replacement Value	\$28,791,663
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Facility Condition Needs Index	0.28
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Gross Square Feet	77,575
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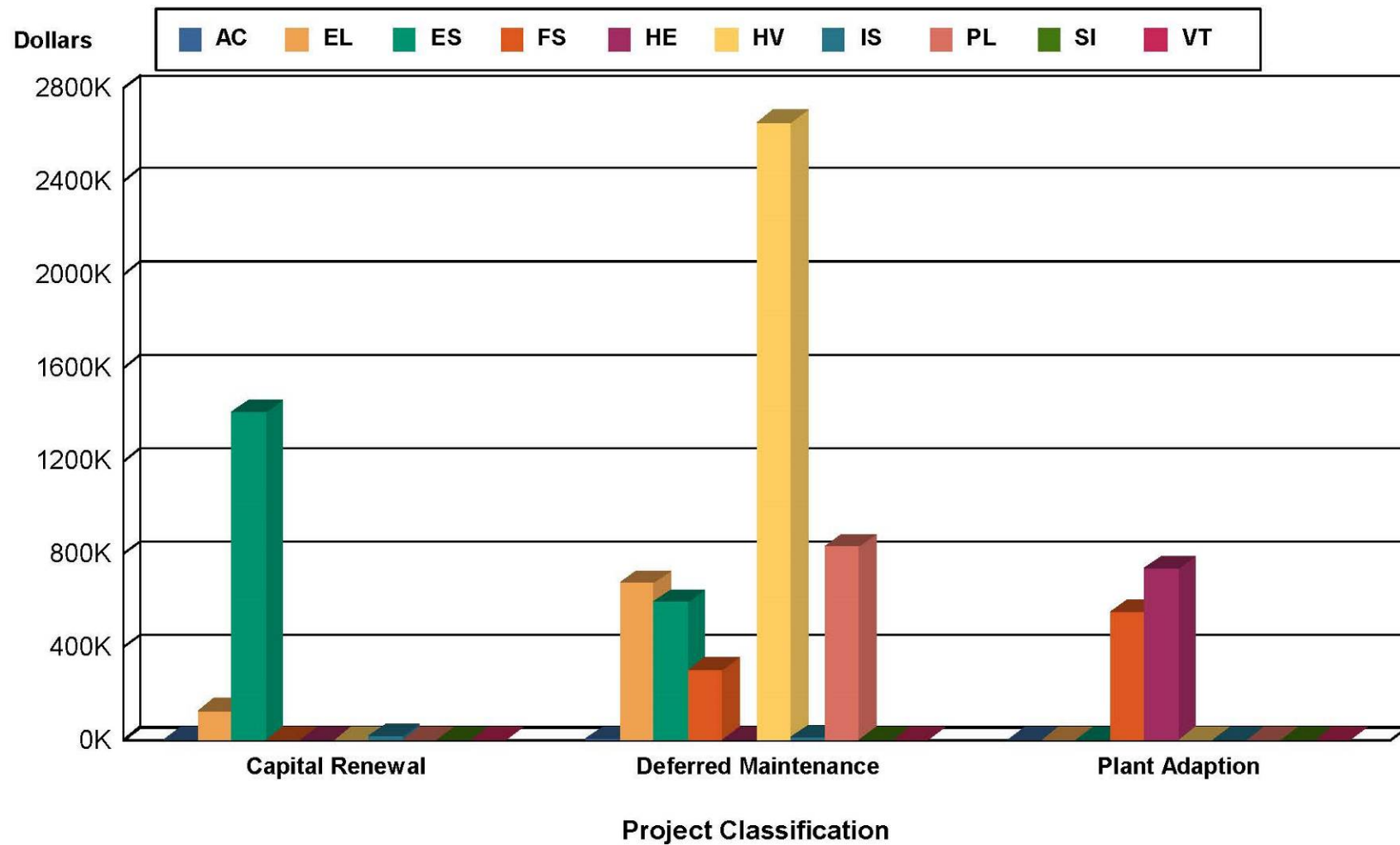
Total Cost Per Square Foot	\$102.12
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System Code by Project Class Graph

FACILITY CONDITION ANALYSIS

System Code by Project Class

011 : Brooks Hall



Project Class by Priority Class Matrix

Detailed Project Summary
 Facility Condition Assessment
 Project Class by Priority Class
 011 : Brooks Hall

Project Class	Priority Classes				Subtotal
	1	2	3	4	
Capital Renewal	0	17,700	1,538,480	0	1,556,180
Deferred Maintenance	0	5,074,810	3,000	0	5,077,810
Plant Adaption	0	549,278	738,528	0	1,287,806
TOTALS	\$0	\$5,641,789	\$2,280,008	\$0	\$7,921,797

Current Replacement Value	\$28,791,663
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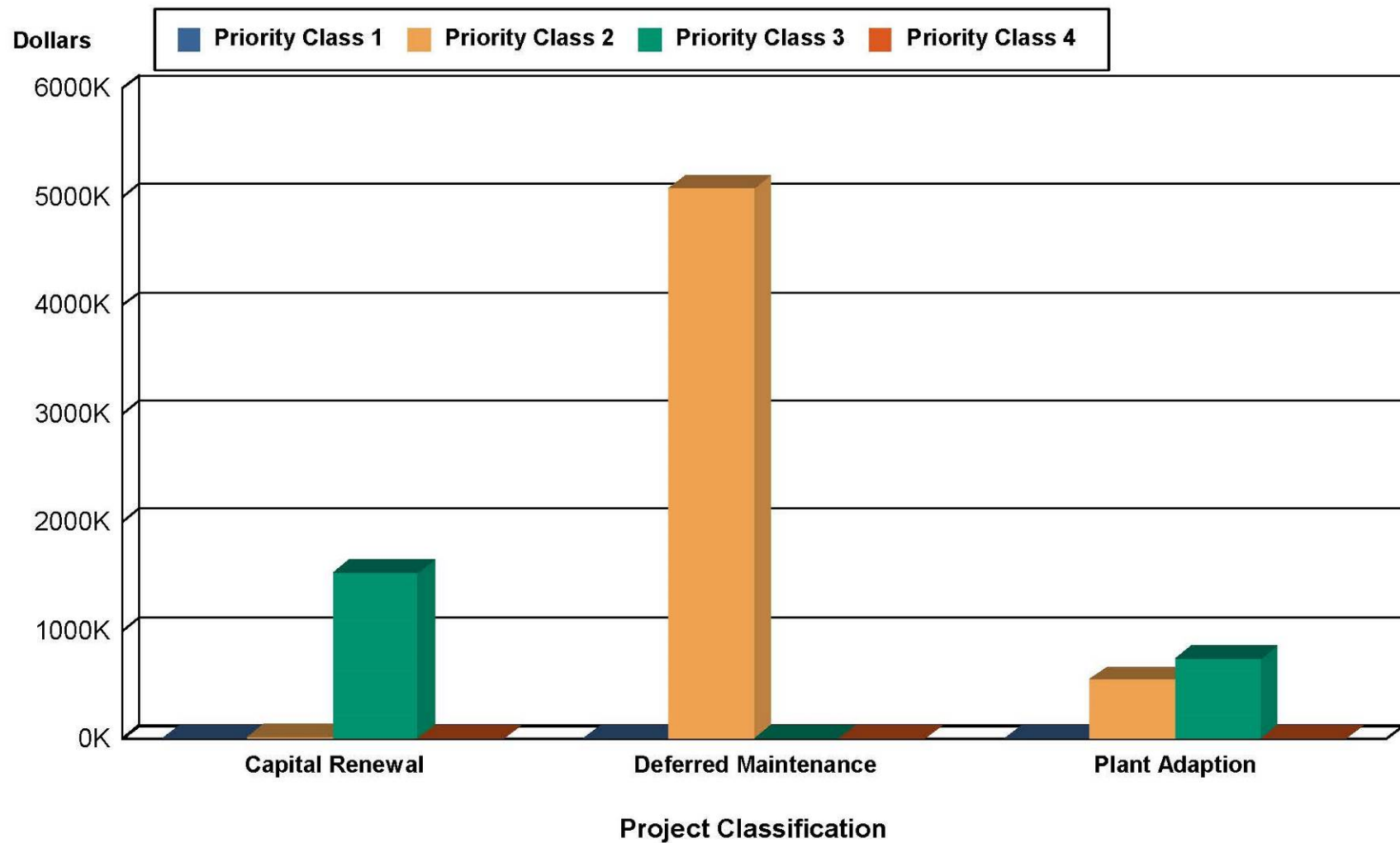
Facility Condition Needs Index	0.28
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Gross Square Feet	77,575
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Total Cost Per Square Foot	\$102.12
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Project Class by Priority Class Graph

FACILITY CONDITION ASSESSMENT
Project Class by Priority Class
011 : Brooks Hall



Priority Class – Priority Sequence Report

Detailed Project Summary
 Facility Condition Assessment
Priority Class - Priority Sequence
 011 : Brooks Hall

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
EL4B	011EL01	2		Replace Interior Lighting	548,590	54,859	603,449
EL3B	011EL05	2		Electrical System Repairs	40,960	4,096	45,056
EL3B	011EL06	2		Replace Six Aging Electrical Panels	23,936	2,394	26,330
FS2A	011FS02	2		Replace Fire Alarm System	200,582	20,058	220,640
FS3A	011FS03	2		Install Fire Sprinkler System	499,344	49,934	549,278
AC3F	011AC02	2		Upgrade Drinking Fountains	5,268	527	5,795
ES2B	011ES01	2		Clean, Point, Caulk, and Seal Exterior Masonry	97,727	9,773	107,500
ES4B	011ES02	2		Roof Replacement	440,082	44,008	484,090
ES4A	011ES11	2		Clean and Repair Skylights	3,000	0	3,000
FS6A	011FS04	2		Install Safety Railing and Lightning Protection at Roof	75,141	7,514	82,655
IS2B	011IS02	2		Repair and Repaint Damaged Plaster Walls & Ceilings	6,900	690	7,590
IS1A	011IS03	2		Replace Carpet at Rotunda	17,700	0	17,700
IS1B	011IS04	2		Terrazzo Repairs at Lobby	3,000	0	3,000
HV3A	011HV08	2	1	Comprehensive HVAC Sysytem Renovation	2,412,941	241,294	2,654,235
PL1A	011PL01	2	1	Comprehensive plumbing renovation	755,882	75,588	831,470
Totals for Priority Class 2					5,131,053	510,735	5,641,789
EL1B	011EL04	3		Upgrade Electrical Service	117,300	11,730	129,030
ES5B	011ES10	3		Replace Windows	1,281,319	128,132	1,409,450
HE6B	011HE01	3		Asbestos Abatement	671,389	67,139	738,528
SI3A	011SI01	3		Replace Redwood HVAC Screening	3,000	0	3,000
Totals for Priority Class 3					2,073,008	207,001	2,280,008
Grand Total:					7,204,061	717,736	7,921,797

Project Costs Within Range [\$0 to < \$100,000]

Detailed Project Summary
 Facility Condition Assessment
Priority Class - Priority Sequence - Projects < 25,000
 011 : Brooks Hall

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
AC3F	011AC02	2		Upgrade Drinking Fountains	5,268	527	5,795
IS2B	011IS02	2		Repair and Repaint Damaged Plaster Walls & Ceilings	6,900	690	7,590
ES4A	011ES11	2		Clean and Repair Skylights	3,000	0	3,000
IS1A	011IS03	2		Replace Carpet at Rotunda	17,700	0	17,700
IS1B	011IS04	2		Terrazzo Repairs at Lobby	3,000	0	3,000
Totals for Priority Class 2					35,868	1,217	37,085
SI3A	011SI01	3		Replace Redwood HVAC Screening	3,000	0	3,000
Totals for Priority Class 3					3,000	0	3,000
Grand Totals For Projects < 25,000					38,868	1,217	40,085

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
EL3B	011EL05	2		Electrical System Repairs	40,960	4,096	45,056
EL3B	011EL06	2		Replace Six Aging Electrical Panels	23,936	2,394	26,330
Totals for Priority Class 2					64,896	6,490	71,386
Grand Totals For Projects >= 25,000 and < 50,000					64,896	6,490	71,386

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
FS6A	011FS04	2		Install Safety Railing and Lightning Protection at Roof	75,141	7,514	82,655
Totals for Priority Class 2					75,141	7,514	82,655
Grand Totals For Projects >= 50,000 and < 100,000					75,141	7,514	82,655

Project Costs Within Range [> \$100,000]

Detailed Project Summary
Facility Condition Assessment
Priority Class - Priority Sequence - Projects >= 100,000
011 : Brooks Hall

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
EL1B	011EL04	3		Upgrade Electrical Service	117,300	11,730	129,030
Totals for Priority Class 3					117,300	11,730	129,030
Grand Totals For Projects >= 125,000 and < 150,000					117,300	11,730	129,030

ES2B	011ES01	2		Clean, Point, Caulk, and Seal Exterior Masonry	97,727	9,773	107,500
Totals for Priority Class 2					97,727	9,773	107,500
Grand Totals For Projects >= 100,000 and < 125,000					97,727	9,773	107,500

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
FS2A	011FS02	2		Replace Fire Alarm System	200,582	20,058	220,640
Totals for Priority Class 2					200,582	20,058	220,640
Grand Totals For Projects >= 200,000 and < 250,000					200,582	20,058	220,640

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
EL4B	011EL01	2		Replace Interior Lighting	548,590	54,859	603,449
FS3A	011FS03	2		Install Fire Sprinkler System	499,344	49,934	549,278
ES4B	011ES02	2		Roof Replacement	440,082	44,008	484,090
PL1A	011PL01	2	1	Comprehensive plumbing renovation	755,882	75,588	831,470
HV3A	011HV08	2	1	Comprehensive HVAC Sysytem Renovation	2,412,941	241,294	2,654,235
Totals for Priority Class 2					4,656,839	465,684	5,122,522
HE6B	011HE01	3		Asbestos Abatement	671,389	67,139	738,528
ES5B	011ES10	3		Replace Windows	1,281,319	128,132	1,409,450
Totals for Priority Class 3					1,952,708	195,271	2,147,978
Grand Totals For Projects >= 250,000					6,609,546	660,955	7,270,501
Grand Total for All Projects:					7,204,061	717,736	7,921,797

Projects by Project Classification

Detailed Project Summary
Facility Condition Assessment
Project Classification
011 : Brooks Hall

Cat. Code	Project Number	Priority Sequence	Project Classification	Priority Class	Project Title	Total Cost
EL1B	011EL04		Capital Renewal	3	Upgrade Electrical Service	129,030
ES5B	011ES10		Capital Renewal	3	Replace Windows	1,409,450
IS1A	011IS03		Capital Renewal	2	Replace Carpet at Rotunda	17,700
Totals for Capital Renewal						1,556,180
EL3B	011EL05		Deferred Maintenance	2	Electrical System Repairs	45,056
EL3B	011EL06		Deferred Maintenance	2	Replace Six Aging Electrical Panels	26,330
EL4B	011EL01		Deferred Maintenance	2	Replace Interior Lighting	603,449
FS2A	011FS02		Deferred Maintenance	2	Replace Fire Alarm System	220,640
ES2B	011ES01		Deferred Maintenance	2	Clean, Point, Caulk, and Seal Exterior Masonry	107,500
AC3F	011AC02		Deferred Maintenance	2	Upgrade Drinking Fountains	5,795
ES4B	011ES02		Deferred Maintenance	2	Roof Replacement	484,090
IS2B	011IS02		Deferred Maintenance	2	Repair and Repaint Damaged Plaster Walls & Ceilings	7,590
IS1B	011IS04		Deferred Maintenance	2	Terrazzo Repairs at Lobby	3,000
SI3A	011SI01		Deferred Maintenance	3	Replace Redwood HVAC Screening	3,000
ES4A	011ES11		Deferred Maintenance	2	Clean and Repair Skylights	3,000
FS6A	011FS04		Deferred Maintenance	2	Install Safety Railing and Lightning Protection at Roof	82,655
HV3A	011HV08	1	Deferred Maintenance	2	Comprehensive HVAC Sysytem Renovation	2,654,235
PL1A	011PL01	1	Deferred Maintenance	2	Comprehensive plumbing renovation	831,470
Totals for Deferred Maintenance						5,077,810
FS3A	011FS03		Plant Adaption	2	Install Fire Sprinkler System	549,278
HE6B	011HE01		Plant Adaption	3	Asbestos Abatement	738,528
Totals for Plant Adaption						1,287,806
Grand Total:						7,921,797

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Health

Project Number:	011HE01	Title:	Asbestos Abatement
Priority Sequence:	0		
Priority Class:	3		
Category Code:	HE6B	System:	HEALTH
		Component:	HAZARDOUS MATERIAL
		Element:	MECHANICAL ASBESTOS

Project Description

From 2008: There are several areas within the building that have been identified as having asbestos containing materials. A survey inspection was performed by Professional Service Industries on April 15-16, 1997. From that survey the following was identified: The bulk of ACM identified is rough plaster, floor tile and mastic, and thermal system insulation (TSI), located throughout the building. Numerous areas of asbestos-containing floor tile and mastic are below carpeted areas. TSI (pipe fitting insulation and pipe insulation) was found throughout the first floor area and are assumed to be present on the second and third floors as well. Pipe chases were inaccessible. The rigid block pipe insulation identified as ACM (HGA-06) is part of the steam heat system that connects to all radiators. The rough plaster identified as an ACM is present throughout the building in a large number of rooms. The ACM identified in this survey was assessed as being in good condition at the time of the survey. As the building renovation progresses, disturbance of the in-place asbestos containing materials is expected. Federal regulations require that asbestos containing materials, if impacted by renovation, be removed prior to disturbance by accredited personnel. This project addresses the additional costs incurred during typical renovation as asbestos is discovered and remediated.

2013 Update: Most of the material identified above still remains in place. In a future comprehensive renovation, all of the ACM would be removed from the building. Updated costs are provided, and assume that asbestos-containing materials will be replaced by modern materials.

Task Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Asbestos abatement and replacement pipe insulation	LF	842	\$2.80	\$2,358	\$7.89	\$6,643	\$9,001
Asbestos abatement and replacement floor tile	SF	34,139	\$2.56	\$87,396	\$3.02	\$103,100	\$190,496
Asbestos abatement and replacement plaster	SF	16,000	\$11.94	\$191,040	\$12.08	\$193,280	\$384,320
Project Totals:				\$280,793		\$303,023	\$583,817
Material/Labor Cost							\$583,817
Material Index							100.00
Labor Index							100.00
Material/Labor Indexed Cost							\$583,817
General Contractor Mark Up at 15.0%						+	\$87,572
Inflation						+	\$0
Construction Cost							\$671,389
Professional Fees at 10.0%						+	\$67,139
Total Project Cost							\$738,528

Accessibility

Project Number: 011AC02 **Title:** Upgrade Drinking Fountains
Priority Sequence: 0
Priority Class: 2
Category Code: AC3F **System:** ACCESSIBILITY
 Component: INTERIOR PATH OF TRAVEL
 Element: DRINKING FOUNTAINS

Project Description

Sporadic improvements throughout the building have included the installation of early models of handicapped-accessible drinking fountains, which are now obsolete. Remove existing fixtures and replace with modern bi-level drinking fountains, one set on each level.

Task Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Dual level drinking fountain	EA	3	\$1,168	\$3,504	\$359	\$1,077	\$4,581
Project Totals:				\$3,504		\$1,077	\$4,581

Material/Labor Cost		\$4,581
Material Index		100.00
Labor Index		100.00
Material/Labor Indexed Cost		\$4,581
General Contractor Mark Up at 15.0%	+	\$687
Inflation	+	\$0
Construction Cost		\$5,268
Professional Fees at 10.0%	+	\$527
Total Project Cost		\$5,795

Exterior Systems

Project Number: 011ES01 **Title:** Clean, Point, Caulk, and Seal Exterior Masonry
Priority Sequence: 0
Priority Class: 2
Category Code: ES2B **System:** EXTERIOR
 Component: COLUMNS/BEAMSWALLS
 Element: FINISH

Project Description

The exterior brick surfaces are generally in poor condition from age and elements. Some areas need brick pointing, mortar repair, and/or construction joint caulking to restore weather protection. This work is selective, so matching mortar should be applied. Following the detailed examination of the brick and repair of mortar construction joints, the entire building should be pressure washed to remove soil and stains. Moisture may be penetrating the masonry facade, causing the older brickwork to spall. Because of this, it is recommended to apply a spray sealant directly onto the exterior masonry surfaces, including brick and marble, as well as marble columns and balustrade elements (13,400 SF), and marble flooring at north breezeway (2000SF).

Task Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Construction joint caulk and backer	LF	2,000	\$2.96	\$5,920	\$1.14	\$2,280	\$8,200
Tuck pointing of the building facades	SF	2,000	\$4.57	\$9,140	\$2.25	\$4,500	\$13,640
Damp-proofing / surface sealing	SF	15,400	\$2.25	\$34,650	\$1.25	\$19,250	\$53,900
Pressure wash with chemical wash	SF	15,400	\$0.45	\$6,930	\$0.15	\$2,310	\$9,240
Project Totals:				\$56,640		\$28,340	\$84,980

Material/Labor Cost		\$84,980
Material Index		100.00
Labor Index		100.00
Material/Labor Indexed Cost		\$84,980
General Contractor Mark Up at 15.0%	+	\$12,747
Inflation	+	\$0
Construction Cost		\$97,727
Professional Fees at 10.0%	+	\$9,773
Total Project Cost		\$107,500

Project Number:	011ES02	Title:	Roof Replacement
Priority Sequence:	0		
Priority Class:	2		
Category Code:	ES4B	System:	EXTERIOR
		Component:	ROOF
Project Description:		Element:	REPLACEMENT

Exterior Systems

Project Number:	011ES10	Title:	Replace Windows
Priority Sequence:	0		
Priority Class:	3		
Category Code:	ES5B	System:	EXTERIOR
		Component:	FENESTRATIONS
		Element:	WINDOWS

Project Description

From 2008: The existing single-glazed windows are in at best fair condition, and their replacement is recommended. The replacements should retain similar profiles to the original, but should incorporate modern energy-efficient features. Replacement of interior and exterior sills and trim may also be necessary as part of the overall effort. This project is intended to be coordinated with other exterior envelope projects for best efficiency.

2013 Update: Windows in the central bay are single-pane glass in painted steel frames, most of which are inoperable and many of which do not completely close. It is recommended to replace all glazing with double-pane glass in prefinished aluminum frames, replicating the original design, or as an up-front cost-saving effort, to add an insulating panel as was done at the south-facing high windows in the rotunda restoration project. Clear and spandrel glazing at the north addition is single-pane throughout, as is the glazing at the third level of the south wing. The surface area of glazing at the lower levels is insignificant. "Worst case" pricing is provided.

Task Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Exterior operable glazing units, aluminum- or wood-framed	SF	14,470	\$22.00	\$318,340	\$55.00	\$795,850	\$1,114,190
Project Totals:				\$318,340		\$795,850	\$1,114,190

Material/Labor Cost		\$1,114,190
Material Index		100.00
Labor Index		100.00
Material/Labor Indexed Cost		\$1,114,190
General Contractor Mark Up at 15.0%	+	\$167,129
Inflation	+	\$0
Construction Cost		\$1,281,319
Professional Fees at 10.0%	+	\$128,132
Total Project Cost		\$1,409,450

Exterior Systems

Project Number:	011ES11	Title:	Clean and Repair Skylights
Priority Sequence:	0		
Priority Class:	2		
Category Code:	ES4A	System:	EXTERIOR
		Component:	ROOF
		Element:	REPAIR

Project Description

In addition to the oculus of the rotunda, seven skylights are located on the roof. (5 at Library, 2 at gallery adjacent to Rotunda.) The skylights are covered with copper-framed wire-reinforced glass constructions for protection. Protective coverings are in uniformly poor condition; drip edges are deteriorating and numerous panes of glass are cracked. All of the skylights are very dirty, and should be cleaned both inside and out to remove insects and dirt. This work should be done in conjunction with other roof work for greatest efficiency.

Task Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Clean and repair skylights	LOT	1	\$1,000	\$1,000	\$2,000	\$2,000	\$3,000
Project Totals:				\$1,000		\$2,000	\$3,000

Material/Labor Cost		\$3,000
Material Index		100.00
Labor Index		100.00
Material/Labor Indexed Cost		<u>\$3,000</u>
No GCM Required	+	\$0
Inflation	+	<u>\$0</u>
Construction Cost		<u>\$3,000</u>
No Professional Fees Required	+	<u>\$0</u>
Total Project Cost		<u>\$3,000</u>

HVAC

Project Number: 011HV08 **Title:** Comprehensive HVAC Sysstem Renovation
Priority Sequence: 1
Priority Class: 2
Category Code: HV3A **System:** HVAC
Component: HEATING/COOLING
Element: SYSTEM RETROFIT/REPLACE

Project Description

Due to the overall age and energy efficiency of the current system, a complete redesign and renovation of the HVAC system is recommended. Demolish and dispose of existing equipment. Install a new modern HVAC system with variable air volume and constant volume air distribution as needed. This includes new air handlers, ductwork, terminal units, heat exchangers, pumps, piping, controls, and electrical connections. Specify direct digital controls for the new equipment. Incorporate variable frequency drives into the new HVAC design as applicable.

Task Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
CLASSROOM - Air handlers, ductwork, VAVs, VFDs, DDCs, heat exchangers, pumps, piping, electrical connections, and demolition of existing equipment	SF	25,798	\$11.64	\$300,289	\$14.23	\$367,106	\$667,394
OFFICE - Air handlers, ductwork, VAVs, VFDs, DDCs, heat exchangers, pumps, piping, electrical connections, and demolition of existing equipment	SF	50,647	\$9.65	\$488,744	\$11.80	\$597,635	\$1,086,378
MECHANICAL - Air handlers, ductwork, VAVs, VFDs, DDCs, heat exchangers, pumps, piping, electrical connections, and demolition of existing equipment	SF	1,400	\$6.18	\$8,652	\$7.55	\$10,570	\$19,222
Project Totals:				\$797,684		\$975,310	\$1,772,994

Material/Labor Cost		\$1,772,994
Material Index		100.00
Labor Index		100.00
Material/Labor Indexed Cost		\$1,772,994
General Contractor Mark Up at 15.0%	+	\$265,949
Inflation	+	\$373,997
Construction Cost		\$2,412,941
Professional Fees at 10.0%	+	\$241,294
Total Project Cost		\$2,654,235

Electrical

Project Number: 011EL04 **Title:** Upgrade Electrical Service 2013
Priority Sequence:
Priority Class: 3
Category Code: EL1B **System:** ELECTRICAL
Component: INCOMING SERVICE
Element: DISCONNECTS

Project Description

Power for Brooks Hall comes from a 500 kVA transformer deriving a 208 volt secondary from the campus 12,470 volt loop. It enters the building through a 2000 amp disconnect switch mounted adjacent to the transformer. From the disconnect, it runs through main distribution section MS located in room 110. The exterior disconnect and the main distribution section MS have an effective service life of twenty years; they are, as of this writing, fifteen years old and will need to be replaced in the next five to ten years.

Remove existing electric service equipment. Install a new service transformer, switchgear, conductors, connections, and terminations. Main switchgear components should include a ground fault main circuit breaker, draw-out distribution breakers for ease of maintenance, digital metering for remote control / monitoring, and transient surge protection. Size the electrical service to accommodate present and future electrical demands.

Task Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
(1200 amp plus) Service transformer, main distribution, all connections, and terminations	AMP	2,000	\$18.00	\$36,000	\$33.00	\$66,000	\$102,000
Project Totals:				\$36,000		\$66,000	\$102,000

Material/Labor Cost		\$102,000
Material Index		100.00
Labor Index		100.00
Material/Labor Indexed Cost		\$102,000
General Contractor Mark Up at 15.0%	+	\$15,300
Inflation	+	\$0
Construction Cost		\$117,300
Professional Fees at 10.0%	+	\$11,730
Total Project Cost		\$129,030

Interior Systems

Project Number:	011IS02	Title:	Repair and Repaint Damaged Plaster Walls & Ceilings
Priority Sequence:	0		
Priority Class:	2		
Category Code:	IS2B	System:	INTERIOR/FINISH SYS.
		Component:	PARTITIONS
		Element:	FINISHES

Project Description

The design library retains much of the detail of the original reading room, despite the insertion of a mezzanine level which provided much-needed office space at one time. The elaborate plasterwork is threatened by roof leaks and water intrusion, which also could damage the valuable collections housed in this space. Minor water damage is also observed at the domed Rotunda. These high-profile spaces are in need of repair and paint touchup following roof repairs/membrane replacements.

Task Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Prime and paint (one coat each), surface prep, masking, supplies, tools, and clean-up	SF	500	\$1.00	\$500	\$1.00	\$500	\$1,000
Plaster Repairs	SF	500	\$5.00	\$2,500	\$5.00	\$2,500	\$5,000
Project Totals:				\$3,000		\$3,000	\$6,000

Material/Labor Cost		\$6,000
Material Index		100.00
Labor Index		100.00
Material/Labor Indexed Cost		\$6,000
General Contractor Mark Up at 15.0%	+	\$900
Inflation	+	\$0
Construction Cost		\$6,900
Professional Fees at 10.0%	+	\$690
Total Project Cost		\$7,590

Interior Systems

Project Number:	011IS03	Title:	Replace Carpet at Rotunda
Priority Sequence:	0		
Priority Class:	2		
Category Code:	IS1A	System:	INTERIOR/FINISH SYS.
		Component:	FLOOR
		Element:	FINISHES-DRY

Project Description

The "restored" rotunda is fully accessible. White-painted walls are lined with tackable panels and the space is frequently used for exhibitions, charettes, and portfolio presentations. Minor water damage is observed at the dome, walls and doors are in good condition, and the wood floors and steps are in fair condition. It is recommended to remove the existing level-loop carpet and provide a wood, engineered wood, or wood-look premium vinyl plank floor in this versatile space so that a washable surface can be better maintained.

Task Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Premium vinyl plank flooring	SF	885	\$10.00	\$8,850	\$10.00	\$8,850	\$17,700
Project Totals:				\$8,850		\$8,850	\$17,700

Material/Labor Cost		\$17,700
Material Index		100.00
Labor Index		100.00
Material/Labor Indexed Cost		<u>\$17,700</u>
No GCM Required	+	\$0
Inflation	+	<u>\$0</u>
Construction Cost		<u>\$17,700</u>
No Professional Fees Required	+	\$0
Total Project Cost		<u><u>\$17,700</u></u>

Interior Systems

Project Number:	011IS04	Title:	Terrazzo Repairs at Lobby
Priority Sequence:	0		
Priority Class:	2		
Category Code:	IS1B	System:	INTERIOR/FINISH SYS.
		Component:	FLOOR
		Element:	FINISHES-WET

Project Description

The terrazzo floors of the original building have been covered over with carpet or vinyl tile except at the lobby, where the patterned floor and its precast terrazzo base remain, although damaged by settlement resulting in large east-west and north-south cracks. Terrazzo repairs are recommended, which will include cosmetic repair of cracks in the floor and at the base, and cleaning/resurfacing/buffing of the entire floor. 100LF cracks to repair, 1200 SF to buff. Cost estimate provides for two men for three days. No design allowance, GC markup included.

2 men x 8 hours x \$50/hr x 3 days = \$2400

Material allowance = \$600

Task Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Terrazzo repair and resurfacing	LOT	1	\$600	\$600	\$2,400	\$2,400	\$3,000
Project Totals:				\$600		\$2,400	\$3,000

Material/Labor Cost		\$3,000
Material Index		100.00
Labor Index		100.00
Material/Labor Indexed Cost		\$3,000
No GCM Required	+	\$0
Inflation	+	\$0
Construction Cost		\$3,000
No Professional Fees Required	+	\$0
Total Project Cost		\$3,000

Plumbing

Project Description

Project Number:	011PL01	Title:	Comprehensive plumbing renovation
Priority Sequence:	1		
Priority Class:	2		
Category Code:	PL1A	System:	PLUMBING
		Component:	DOMESTIC WATER
		Element:	PIPING NETWORK

Project Description

Six toilet rooms for Brooks Hall contain eleven hand wash sinks, ten water closets, three urinals, and are not all low-flow fixtures. A project recommending replacement of the lavatory fixtures to accommodate low-flow requirements and ADA requirements is included in the comprehensive renovation project. This work should coincide with other major projects such as HVAC and electrical system renovations. Demolish the existing water supply and drain piping networks, all plumbing fixtures, and domestic hot water heating equipment. Install a new insulated copper water supply network, complete with backflow protection devices, pressure regulators, and appropriately placed isolation valves. Install a new drain network comprised of cast-iron piping with no-hub fittings. New plumbing fixtures should be installed throughout, in coordination with proposed ADA recommendations. Install new domestic water heating equipment appropriately sized to accommodate the new fixtures.

Task Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
CLASSROOM Water supply and drain piping systems, plumbing fixtures, water heating equipment, demolition, cut and patch	SF	23,885	\$7.55	\$180,332	\$4.19	\$100,078	\$280,410
LIBRARY Water supply and drain piping systems, plumbing fixtures, water heating equipment, demolition, cut and patch	SF	3,313	\$4.23	\$14,014	\$2.34	\$7,752	\$21,766
OFFICE / ADMIN Water supply and drain piping systems, plumbing fixtures, water heating equipment, demolition, cut and patch	SF	50,647	\$3.22	\$163,083	\$1.78	\$90,152	\$253,235
Project Totals:				\$357,429		\$197,982	\$555,411

Material/Labor Cost		\$555,411
Material Index		100.00
Labor Index		100.00
Material/Labor Indexed Cost		\$555,411
General Contractor Mark Up at 15.0%	+	\$83,312
Inflation	+	\$117,159
Construction Cost		\$755,882
Professional Fees at 10.0%	+	\$75,588
Total Project Cost		\$831,470

Site

Project Number:	011SI01	Title:	Replace Redwood HVAC Screening
Priority Sequence:	0		
Priority Class:	3		
Category Code:	SI3A	System:	SITE
		Component:	HARDSCAPE
		Element:	STRUCTURE

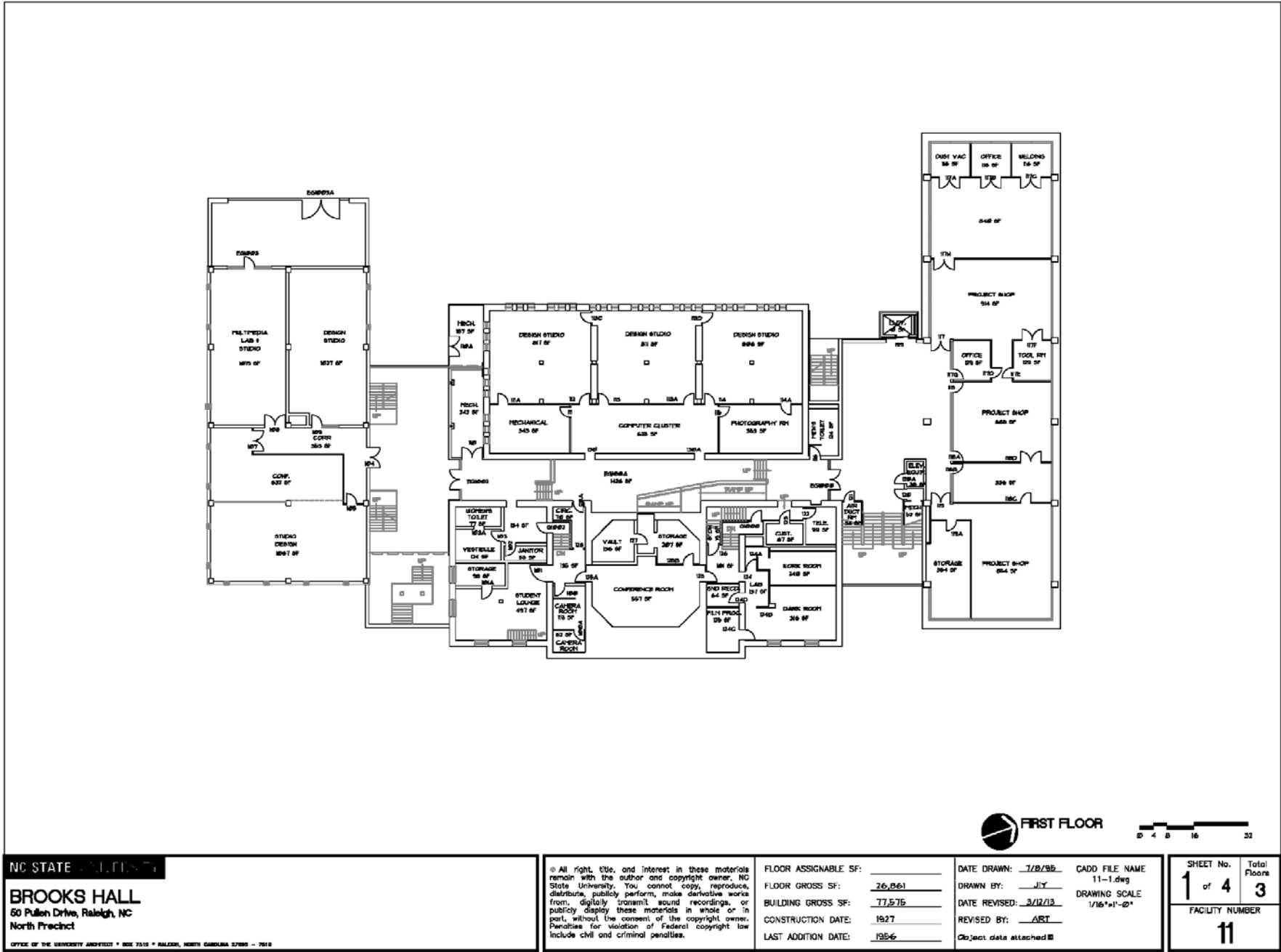
Project Description

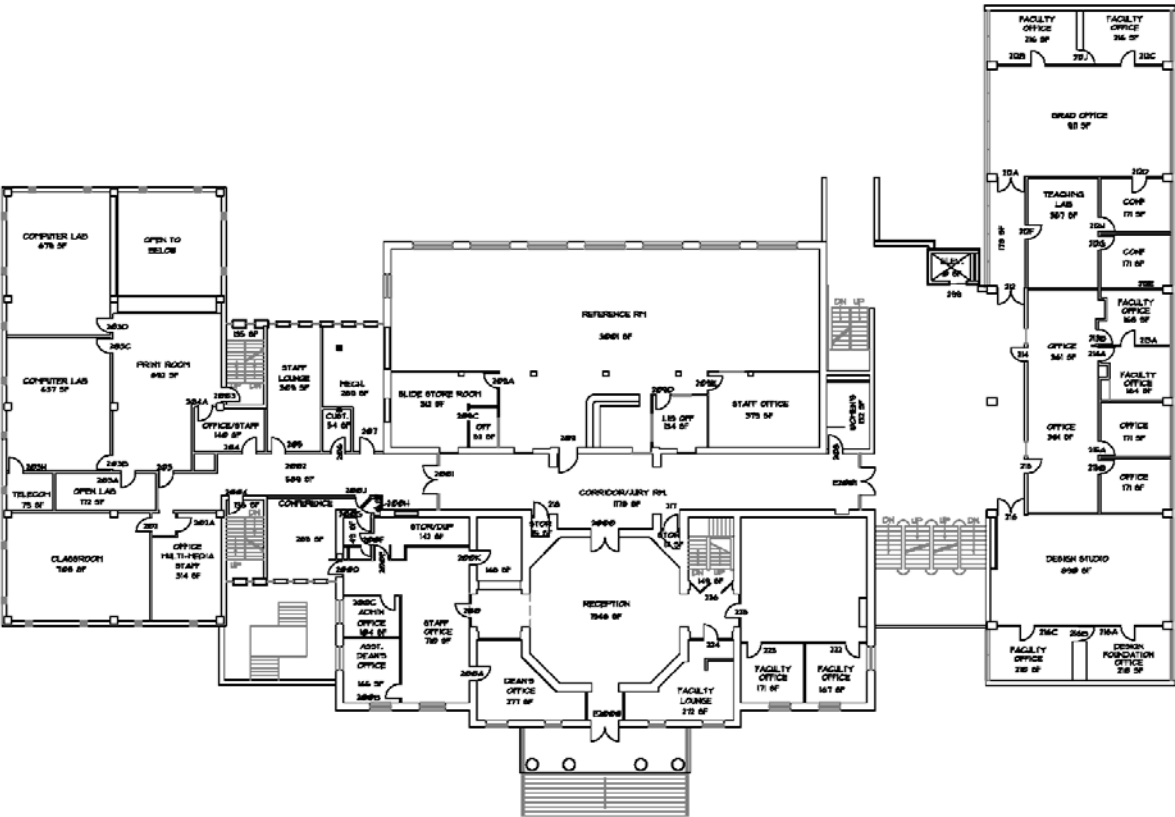
A redwood fence screens HVAC equipment adjacent to the south breezeway. The fence has deteriorated to a point that it has become structurally unsound. It is recommended to remove and replace the screening fence with (a) similar materials or (b) more durable materials such as brick, emulating the pattern of the nearby brick sculpture garden enclosure, while also allowing air circulation for the enclosed equipment.

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Replace deteriorated redwood fence with similar materials	LOT	1	\$1,000	\$1,000	\$2,000	\$2,000	\$3,000
Project Totals:				\$1,000		\$2,000	\$3,000

Material/Labor Cost		\$3,000
Material Index		100.00
Labor Index		100.00
Material/Labor Indexed Cost		\$3,000
No GCM Required	+	\$0
Inflation	+	\$0
Construction Cost		\$3,000
No Professional Fees Required	+	\$0
Total Project Cost		\$3,000

SECTION 4 – FLOOR PLANS





SECOND FLOOR

NC STATE UNIVERSITY

BROOKS HALL
60 Pullen Drive, Raleigh, NC
North Precinct

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FLOOR ASSIGNABLE SF: _____
FLOOR GROSS SF: 25,571
BUILDING GROSS SF: 77,575
CONSTRUCTION DATE: 1927
LAST ADDITION DATE: 1956

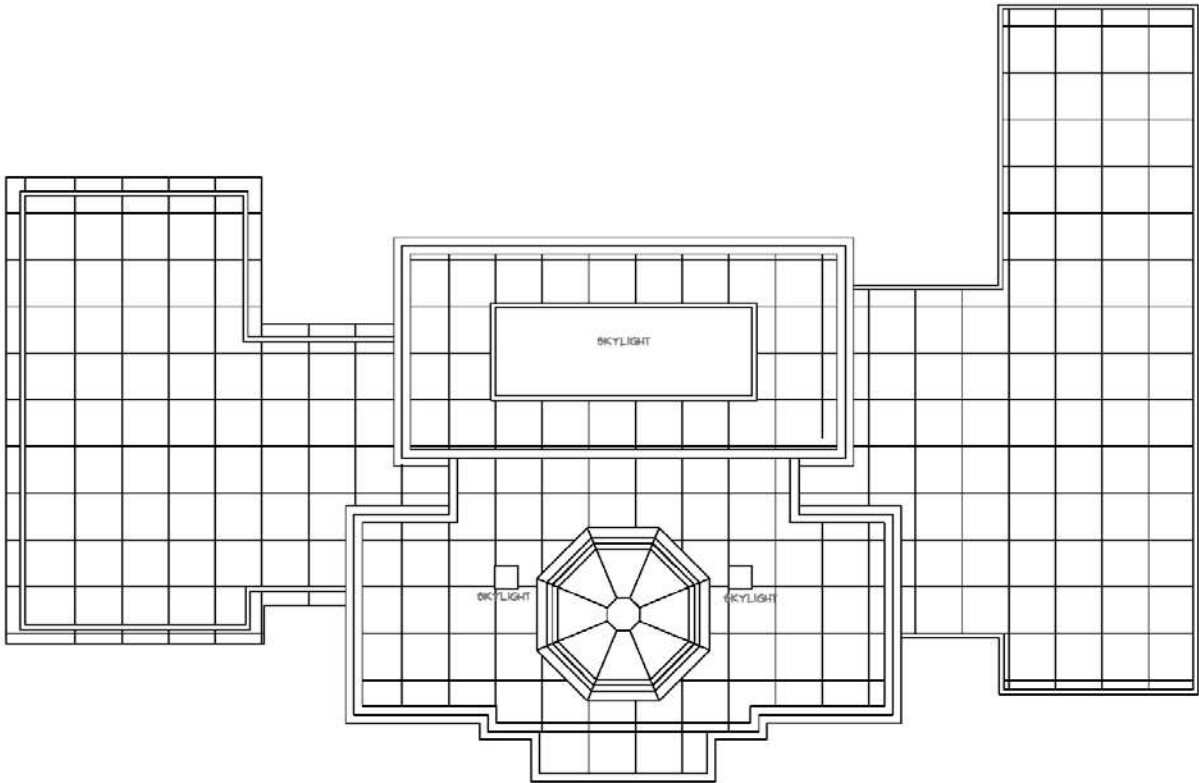
DATE DRAWN: 7/8/95 CADD FILE NAME: 11-2.dwg
DRAWN BY: JLY
DATE REVISED: 3/12/13 DRAWING SCALE: 1/16"=1'-0"
REVISED BY: ABT
Object: data attached

SHEET No.	Total Floors
2 of 4	3
FACILITY NUMBER	
11	



Figure 1: A step function graph showing the number of subjects in each age group. The x-axis is labeled 'Age' with values 0, 1, 8, 16. The y-axis is labeled 'Number of subjects' with values from 0 to 100. The graph shows a step function with the following values: 0 for age 0, 1 for age 1, 2 for age 8, 3 for age 16, and 4 for age 24.

11



NC STATE UNIVERSITY

BROOKS HALL
60 Pullen Drive, Raleigh, NC
North Precinct

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FLOOR ASSIGNABLE SF: _____
FLOOR GROSS SF: _____
BUILDING GROSS SF: 77,575
CONSTRUCTION DATE: 1927
LAST ADDITION DATE: 1956

DATE DRAWN: 7/2/98 CADD FILE NAME: 11-r.dwg
DRAWN BY: JLY DRAWING SCALE: 1/16"=1'-0"
DATE REVISED: 3/12/13
REVISED BY: ART
Object data attached

SHEET No.	Total Floors
4 of 4	3
FACILITY NUMBER	
11	

SECTION 5 – APPENDIX

Proposed Interim Projects in Lieu of Funding for Major Renovations

The following projects are suggested to achieve immediate savings in energy costs. In most if not all cases, any upgraded equipment and fixtures will be retained when comprehensive renovation may later take place.

Energy Efficiency Projects

Bldg No.	Building Name	Job Title	Job Description	Total Project Cost
011	Brooks Hall	Replace (1) 110 ton cooling tower	The existing Marley® cooling tower has a 110 ton capacity; it is 16 years old, corroded panels, screening and in need of replacement. Replacement only recommended if tie-in to the campus loop is not projected in the next 5-10 years.	\$ 33,583.00
011	Brooks Hall	Replace one 12 ton DX/Hot water AHU unit	The Rotunda 201, Galleries 202, 203, and Corridor 205 are heated and cooled by AHU-2. AHU-2 is 12 ton, 3,900 CFM DX unit with a roof mounted condensing unit. Heating coils for the AHU are hot water supplied by the heat steam-to-hot water convertor. The condensing unit was recently replaced in 2008 (5 years old) is in fair condition and well within its effective service life of 15 years. The air handler was installed during a 1988 renovation making the unit 25 years old with an effective service life of 20 years.	\$ 8,532.00
011	Brooks Hall	Retrofit approximately 790 T8 fluorescent fixtures w/ 25 watt lamps	Most of the fixtures in Brooks were replaced with T8 technology 5-10 yrs ago, but the lamps in operation now are predominantly 32 watt variety. 25 watt lamps are app. 20% more efficient. \$3/lamp x 2lamps/fixture x 790 fixtures = \$4740	\$ 4,740.00
011	Brooks Hall	Remove existing drinking fountains and install one bi-level unit per floor (3 units total)	Sporadic improvements throughout the building have included the installation of early models of handicapped-accessible drinking fountains, which are now obsolete.	\$ 5,795.00



110 ton cooling tower



12 ton AHU

Maintenance Work Orders

Maintenance Work Orders will be submitted for the repair projects described below; the work orders will be subsequently tracked until completion by the Repair and Renovation Unit.



1. Improperly sized tank lid. Needs to be replaced with a properly sized lid. Could be a potential safety hazard if lid is knocked off. Toilet Room 103A



2. Unsecured water supply line to water closet. Toilet Room 103A



3. Interior elevator controls are ADA- compliant but the north breezeway call-buttons have no Braille markings. Add Braille symbols.



4. Several restrooms are equipped w/ keyed switches. These should be replaced w/ occupancy sensors more efficiency.



5. First floor corridor is used as gallery space, and walls are lighted with spotlights. These should be replaced with LED lamps for greater energy efficiency.



6. All (7) skylights are dirty and many are damaged. Make repairs/replace glass with matching materials as needed, clean inside and out for maximum daylight penetration.



7. The elaborate plasterwork of the design library is threatened by roof leaks and water intrusion, which also could damage the valuable collections housed in this space. It should be noted again that the plaster in this building has been identified as an asbestos-containing material, which is becoming friable in this state of deterioration. Repairs are recommended for both this space (and the rotunda) following the replacement of the roof.

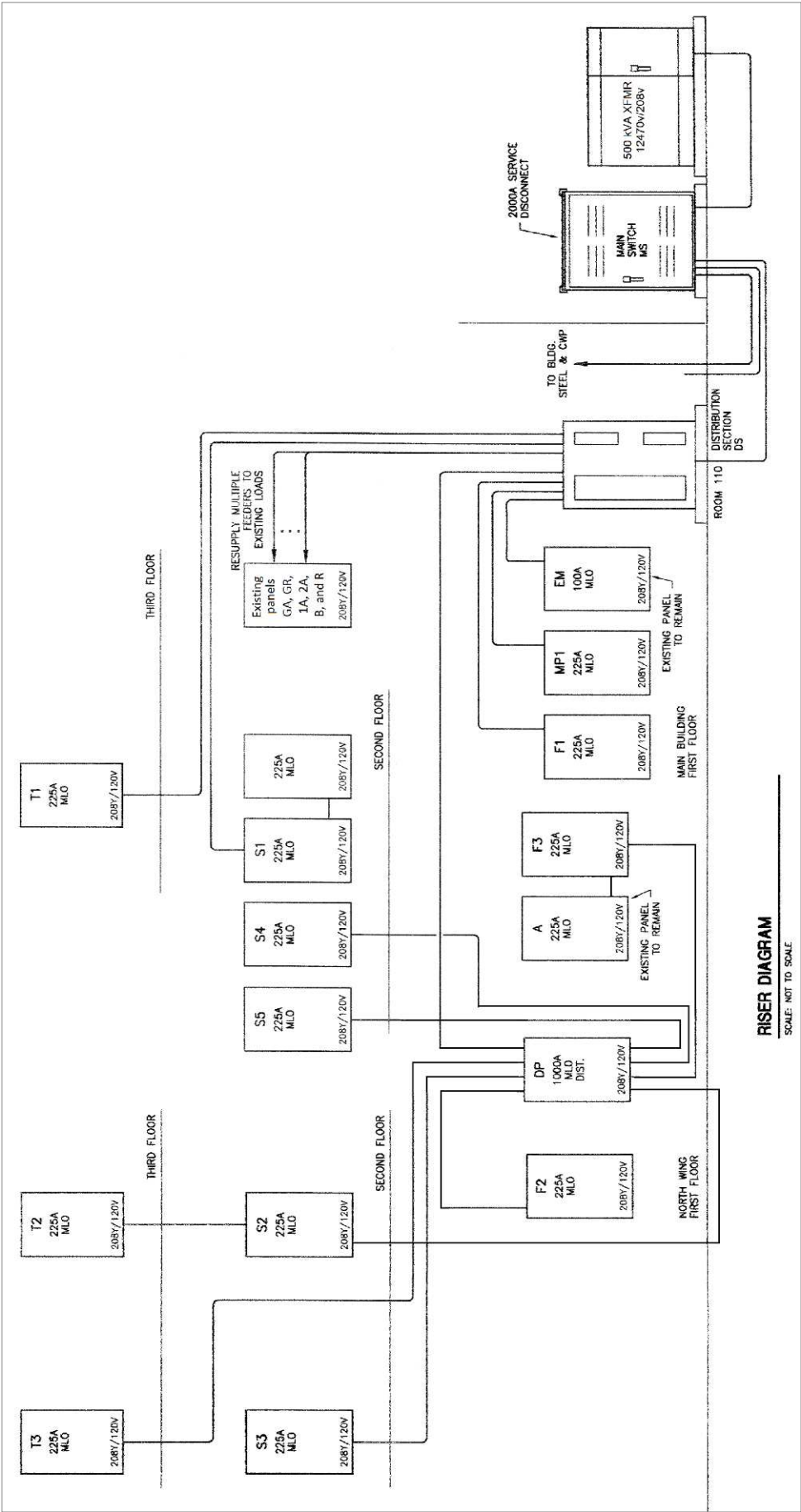


8. The original terrazzo floors have been covered over with carpet or vinyl tile except at the lobby, where the patterned floor and its precast terrazzo base remain, although damaged by settlement resulting in large east-west and north-south cracks. Terrazzo repairs are recommended, which will include cosmetic repair of cracks in the floor and at the base, and cleaning/resurfacing/buffing of the entire floor.



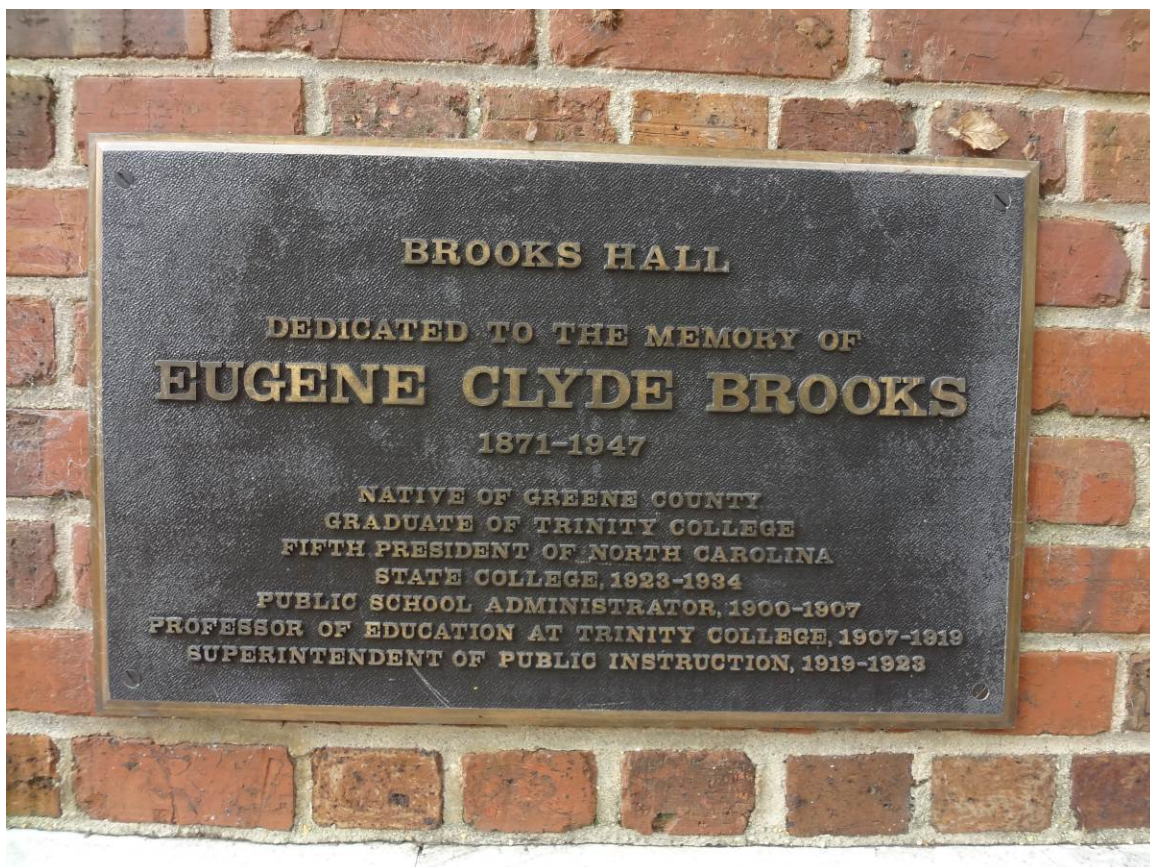
9. A redwood enclosure at the HVAC service yard has deteriorated to a point where its structural integrity is questionable, and should be replaced with similar or more durable masonry construction to blend with the adjacent enclosures.

Additional Photographs



Building riser diagram













Footcandle Recommendations for Interior Lighting

Among other sources, the Illuminating Engineering Society (IES) has published lighting recommendations since 1958. Over time, the early specific foot-candle target numbers have evolved into acceptable ranges of low, medium, and intense lighting, so that in general, the recommended brightness of a certain space hosting certain activities should fall within a stated range. A foot-candle, the unit of measure of the intensity of light falling on a surface equal to 1 lumen per square foot, has largely been replaced in the International System by the candela (1 lumen per square meter). As more paper-oriented tasks (drafting, accounting) have moved to electronic formats, lighting brightness levels have been adjusted downward to increase screen/background contrast for increased worker comfort, although task-oriented reading lamps remain in widespread usage. In all cases, the current recommendations in the table below assume that the lighting will be properly designed to take into account the visual characteristics of the task at hand.

TYPE OF ACTIVITY	CATEGORY	RANGES OF ILLUMINANCES		REFERENCE WORK-PLANE
		LUX	FOOTCANDLES	
Public spaces with dark surroundings	A	20-30-50	2-3-5	General lighting throughout spaces
Simple orientation for short temporary visits	B	50-75-100	5-7.5-10	
Working spaces where visual tasks are only occasionally performed	C	100-150-200	10-15-20	
Performance of visual tasks of high contrast or large size	D	200-300-500	20-30-50	
Performance of visual tasks of medium contrast or small size	E	500-750-1000	50-75-100	Illuminance on task
Performance of visual tasks of low contrast or very small size	F	1000-1500-2000	100-150-200	
Performance of visual tasks of low contrast and very small size over a prolonged period	G	2000-3000-5000	200-300-500	Illuminance on task, obtained by a combination of general and local (supplementary lighting)
Performance of very prolonged and exacting visual tasks	H	5000-7500-10000	500-750-1000	
Performance of very special visual tasks of extremely low contrast and small size	I	10000-15000-20000	1000-1500-2000	

- Category A will include inactive areas and minimal night-lighting only, in most public spaces.
- Category B will include areas of heavy personal and laptop computer usage, (offices, study areas), and service areas such as stairwells, corridors, and elevators.
- Category C will include auditoriums, lobbies, lounges, reception areas, storage rooms, toilet rooms, and locker rooms, and some classrooms.
- Category D will include conference rooms, paper-intensive work areas, some classrooms, libraries, light manufacturing.
- Category E will include laboratories, machine shops, kitchens, and medium-duty manufacturing.
- Categories F and above will include clean rooms and specialized medical functions not normally encountered in most campus assessments.

Building Profile

Building Name: Brooks Hall	Building Number: 011	Surveyors:	Scott Crowder	November 2013	
			Kevin Cummings		
			Joe Riley		
		Manager:	Kevin Ingalls		
Fire Protection System					
Fire Alarm System Manufacturer	Honeywell				
Type	zoned				
Fire Alarm System Features	smoke, heat, beam, and duct detectors, horn/strobes, magnetic door holders, pull stations, and a Silent Knight model 5107 digital communicator				
Sprinkler System	none				
Emergency Power					
Type	none	Manufacture	Model	Secondary Voltage	kVA
FACP, emergency lighting provided w/ battery backup					
Electrical Systems		Feeder Voltage	Transformer KVA	Secondary Voltage	Main Breaker Amperage
Inc. Power 1		12470	500	208	2000
Inc. Power 2					
Interior Lighting					
Type of Space / IES®Recommended Foot-candles	Measured Levels	Comments			
Classrooms 10-20, 20-50					
Corridors 5-10, 20-50 at Exit Corridors	187-190, 12, 21	high value beneath skylight on third floor			
Stairways 5-10					
Utility / Mechanical Rooms 5-10	112				
Auditoriums 10-20					
Computer Rooms 10-50	49-52				
General Office 10-50	70, 90				
Restrooms 10-20					
Conference Rooms 20-50					
Lounge/Study Area 10-50	275-300	Library			
Lounge/Study Area 10-50	19-21	staff lounge			
Locker Rooms 10-20					
Craft Shop 50-100	86-88, 57-60	design studio			
Other					
Plumbing Systems					
Supply Piping	Galvanized Steel, PVC, Copper				
Drain Piping					
Ductile Iron, Cast Iron, PVC					
Domestic Hot Water					
(2) Electric water heaters (6 gallon, 80 gallon)					
Toilet Fixture Count					
Men	Water Closets	Urinals	Sinks	Drinking Fountains	
Women	4	3	4		
Unisex	4	0	4		
Totals	2	0	3		
Totals	10	3	11		
Process Fluids/Gasses					
N/A					

73

74

FCAP Terminology and Definitions

The following information is a clarification of Building Report Sections using example definitions.

1. Report Description

Section 1: Building Summary and General Report Information

Section 2: Detailed Project Summaries and Totals

Detailed project totals – Matrix with FCQI data and associated charts

Detailed projects by Priority Class / Priority Sequence

Detailed projects by cost within the range [\$0 < \$100,000]

Detailed projects by cost within the range [> \$100,000]

Detailed projects by Project Classification

Detailed projects by Project Rating Type – Energy Conservation

Detailed projects by Category / System Code

FCQI = Facility Condition Quality Index - Total Project Costs / Replacement Cost. The FCQI provides a life cycle cost comparison. Facility replacement cost is based on replacement with current construction standards for facility use type, and not original design parameters. This index gives the university a ratings method for all assets that can be tracked and illustrated graphically.

Capital Renewal + Deferred Maintenance + Plant Adaption

FCQI = _____

Current Replacement Cost

Section 3: Specific Project Details Illustrating Description / Cost

Section 4: Photographs and Drawings

Photographs typically highlight specific conditions at the facility that were presented in the Building Summary or in the Specific Project Details section. Drawings are copies of those provided by the university as record from Facilities FIS.

2. Project Classification

Plan / Program Adaption: Expenditures required to adapt the physical plant to the evolving needs of the institution and to changing codes or standards. These are expenditures beyond normal maintenance. Examples include compliance with changing codes (e.g., accessibility), facility alterations required by changed teaching or research methods, and improvements occasioned by the adoption of modern technology (e.g., the use of personal computer networks).

Deferred Maintenance: Refers to expenditures for repairs, which were not accomplished as a part of normal maintenance, or capital repair, which have accumulated to the point that facility deterioration is evident and could impair the proper functioning of the facility. Costs estimated for deferred maintenance projects should include compliance with applicable codes, even if such compliance requires expenditures beyond those essential to affect the needed repairs. Deferred maintenance projects represent catch up expenses.

Capital Renewal: A subset of regular or normal facility maintenance which refers to major repairs or the replacement / rebuilding of major facility components (e.g., roof replacement at the end of its normal useful life is capital repair; roof replacement several years after its normal useful life is deferred maintenance).

Routine Maintenance: Means the day-to-day efforts to control deterioration of facilities (keep up expenses) through scheduled repetitive activities (e.g., cleaning), periodic schedule work (e.g., inspections and equipment adjustments) and minor repairs made on an as-needed basis.

3. Project Subclass Type

Energy Conservation: Projects with energy conservation opportunities, based on simple payback analysis.

4. Priority Sequence by Priority Class

Most projects are assigned both a Priority Sequence number and Priority Class number for categorizing and sorting projects based on critically and recommended execution order.

Example:

Priority Class 1		
CODE	PROJECT NO.	PRIORITY SEQUENCE
HV2C	0001HVO4	01
PL1D	0001PL02	02
Priority Class 2		
IS1E	0001IS06	03
EL4C	0001EL03	04

5. Priority Class

PRIORITY 1 – Currently Critical (Year 1)

Projects in this category require immediate action to:

Return a facility to normal operation

Stop accelerated deterioration

Correct a cited safety hazard

PRIORITY 2 – Potentially Critical (Years 1 - 3)

Projects in this category, if not corrected expeditiously, will become critical within 1 to 3 years.

Situations in this category include:

Intermittent interruptions

Rapid deterioration

Potential safety hazards

PRIORITY 3 – Necessary – Not Yet Critical (Years 3 - 5)

Projects in this category include conditions requiring appropriate attention to preclude predictable deterioration or potential downtime and the associated damage or higher costs if deferred further.

PRIORITY 4 – Recommended (Years 5 - 10)

Projects in this category include items that represent a sensible improvement to existing conditions. These items are not required for the most basic function of a facility; however, Priority 4 projects will either improve overall usability and/or reduce long-term maintenance.

6. Cost Summaries And Totals

The cost summaries and totals are illustrated by Detailed Projects sorted in multiple formats (shown in Sections 2 and 3).

City Index material / labor cost factors: (shown in Sections 2 and 3).

Cost factors are based on the Raleigh City Index and are adjusted for material and labor cost factors (2006). Refer to the project related labor report found later in this section.

Global Markup Percentages	R. S. Means
Local Labor Index	100% of National Average
Local Materials Index	100% of National Average
General Contractor Markup	15% - Includes contractor profit & overhead, bonds & insurance
Professional Fees	10% - Includes architectural / engineering firm design fees, in-house design costs and contingencies

7. Project Number

Example:

Project number = 0001-EL-04 (unique for each independent project)

0001 Building Identification Number
 EL System Code – EL represents Electrical Systems
 04 Sequential Assignment Project Number by Category / System

8. Category Code

Refer to the following Category Code Report.

Example: Category Code = EL5A

EL System Description
 5 Component Description
 A Element Description

CATEGORY CODE	SYSTEM DESCRIPTION
AC1A – AC4B	ACCESSIBILITY
EL1A – EL8A	ELECTRICAL
ES1A – ES6E	EXTERIOR SYSTEMS
FS1A – FS6A	FIRE / LIFE SAFETY SYSTEMS
HE1A – HE7A	HEALTH
HV1A – HV8B	HVAC SYSTEMS
IS1A – IS6D	INTERIOR / FINISH SYSTEMS
PL1A – PL5A	PLUMBING SYSTEMS
SI1A – SI4A	SITE
VT1A – VT7A	VERTICAL TRANSPORTATION

9. Category Code Report

System: Fire / Life Safety			
Code	Component Description	Element Description	Definition
FS1A	Lighting	Egress Lighting/Exit	Includes R & R work on exit signage and packaged AC/DC emergency lighting
FS2A	Detection/Alarm	General	Includes repair or replacement of fire alarm/detection system/components including alarms, pull-boxes, smoke/heat detectors, annunciator panels, central fire control stations, remote dialers, fire station communications, etc.
FS3A	Suppression	Sprinklers	Includes repair or installation of water sprinkler type automatic fire suppressions including water pipe & dry pipe systems, heads, piping, deflectors, valves, monitors, associated fire pump, etc.
FS3B	Suppression	Standpipe/Hose	Includes repair or installation of standpipe system or components including hardware, hoses, cabinets, nozzles, necessary fire pumping system, etc.
FS3C	Suppression	Extinguishers	Includes repairs or upgrades to FE cabinets/wall fastenings and handheld extinguisher testing/replacement
FS3D	Suppression	Other	Includes other fire suppression items not specifically categorized elsewhere including fire blankets, carbon dioxide automatic systems, Halon systems, dry chemical storage systems, etc.
FS4A	Hazardous Materials	Storage Environment	Includes installation or repair of special storage environment for the safe holding of flammable or otherwise dangerous materials/supplies including vented flammables storage cabinets, holding pens/rooms, cages, fire safe chemical storage rooms
FS4B	Hazardous Materials	User Safety	Includes improvements, repairs, installation, or testing of user safety equipment including emergency eyewashes, safety showers, emergency panic/shut-down system, etc.
FS5A	Egress Path	Designation	Includes installation, relocation or repair of posted diagrammatic emergency evacuation routes
FS5B	Egress Path	distance/Geometry	Includes work involving remediation of egress routing problems including elimination of dead end corridors, excessive egress distance modification and egress routing inadequacies
FS5C	Egress Path	Separation Rating	Includes restoration of required fire protection barriers including wall rating compromises, fire rated construction, structural fire proofing, wind/safety glazing, transom refitting, etc.
FS5D	Egress Path	Obstruction	Includes clearance of items restricting the required egress routes
FS5E	Egress Path	Stairs Railing	Includes retrofit of stair/landing configuration/structure, raising heights/geometries, etc.
FS5F	Egress Path	Fire Doors/Hardware	Includes Installation/replacement/repair of fire doors and hardware including labeled fire doors, fire shutters, closers, magnetic holders, panic hardware, etc.
FS5G	Egress Path	Finish/Furniture Ratings	Includes remediation of improper fire/smoke ratings of finishes and furniture along egress routes
FS6A	General	Other	Includes life/fire safety items not specifically categorized elsewhere
System: Health			
Code	Component Description	Element Description	Definition
HE1A	Environmental control	Equipment and Enclosures	Includes temperature control chambers (both hot and cold) for non-food storage. Includes both chamber and all associated mechanical equipment
HE1B	Environmental control	Other	General environmental control problems not categorized elsewhere
HE2A	Pest Control	General	Includes all measures necessary to control and destroy insects, rodents and other pests
HE3A	Refuse	General	Issues related to the collection, handling and disposal of refuse
HE4A	Sanitation Equipment	Laboratory and Process	Includes autoclaves, cage washers, steam cleaners, etc.
HE5A	Food Service	Kitchen Equipment	Includes ranges, grilles, cookers, sculleries, etc.
HE5B	Food Service	Cold Storage	Includes the cold storage room and all associated refrigeration equipment
HE6A	Hazardous Material	Structural Asbestos	Includes testing, abatement and disposal of structural and building finish materials containing asbestos
HE6B	Hazardous Material	Mechanical Asbestos	Includes testing, abatement and disposal of mechanical insulation materials containing asbestos.
HE6C	Hazardous Material	PCB's	Includes testing demolition, disposal and clean up of PCB contaminated substances
HE6C	Hazardous Material	Fuel Storage	Includes monitoring, removal and replacement of above and below ground fuel contaminated soils
HE6E	Hazardous Material	Lead Paint	Includes testing, removal and disposal of lead-based paint systems
HE6F	Hazardous Material	Other	Includes handling, storage and disposal of other hazardous materials
HE7A	General	Other	Includes health related issues not catalogued elsewhere
System: Accessibility			
Code	Component Description	Element Description	Definition
AC1A	Site	Stair and Railings	Includes exterior stairs and railings, which are not a part of the building points
AC1B	Site	Ramps and Walks	Includes sidewalks, grade change ramps (except for a building entrance), curb ramps, etc.
AC1C	Site	Parking	Includes designated parking spaces including striping, signage, access aisles and ramps, etc.
AC1D	Site	Tactile Warning	Includes raised tactile warnings located at traffic crossing and elevation changes
AC2A	Building Entry	General	Includes covers all aspects of entry into the building itself including ramps, lifts, doors and hardware, power operators, etc.
AC3A	Interior Path of Travel	Lifts/Ramps, Elevators	Includes interior lifts, ramps and elevators designed to accommodate level changes inside a building includes both installation and retrofitting
AC3B	Interior Path of Travel	Stairs and Railings	Includes upgrades to interior stairs and handrails for accessibility reasons
AC3C	Interior Path of Travel	Doors and Hardware	Includes accessibility upgrades to the interior doors including widening, replacing hardware power assisted operators, etc.

AC3D	Interior Path of Travel	Signage	Includes interior building signage upgrades for compliance with ADA
AC3E	Interior Path of Travel	Restrooms/Bathrooms	Includes modifications to and installation of accessible public restrooms and bathrooms - bathrooms, which are part of an integral part of residential suites, are catalogued under HC4A
AC3F	Interior Path of Travel	Drinking fountains	Includes upgrading/replacing drinking fountains for reasons of accessibility
AC3G	Interior Path of Travel	Phones	Includes replacement/modification of public access telephones
			Includes all necessary interior modifications necessary to make the services and functions of a building accessible- includes installation of assistive listening systems, modification of living quarters, modifications to laboratory workstations, etc. bathrooms, which are integral to efficiency suites, are catalogued here
AC4A	General	Functional Space Modifications	
AC4B	General	Other	Includes all accessibility issues not catalogued elsewhere

System: Exterior Systems

Code	Component Description	Element Description	Definition
ES1A	Foundation/Footing	Structure	Includes structural foundation improvements involving structural work on foundation wall/footing, piers, caissons, piles including crack repairs, shoring & pointing
ES1B	Foundation/Footing	Damproofing/Dewatering	Includes foundation/footing waterproofing work including damp proofing, dewatering, insulation, etc.
ES2A	Columns/Beams/Walls	Structure	Includes structural work to primary load-bearing structural components aside from floors including columns, beams, bearing walls, lintels, arches, etc.
ES2B	Columns/Beams/Walls	Finish	Includes work involving restoration of the appearance and weatherproof integrity of exterior wall/structure envelope components including masonry/pointing, expansion joints, efflorescence & stain removal, grouting surfacing, chimney repairs, etc.
ES3A	Floor	Structure	Includes work concerning the structural integrity of the load supporting floors both exposed and unexposed including deformation, delamination, spalling, shoring, crack repair, etc.
ES4A	Roof	Repair	Includes work on waterproof horizontal finish (roof) involving repair and/or limited replacement (< 40% total) including membrane patching, flashing repair, coping caulk/resetting, PPT wall parging/coating, walkpad installation, skylight and roof hatch R & R, etc.
ES4B	Roof	Replacement	Includes work involving total refurbishment of roofing system including related component rehabilitation
ES5A	Fenestrations	Doors	Includes work on exterior exit/access door including storefronts, airlocks, air curtains, vinyl slat doors, all power/manual operating hardware (except handicapped), etc.
ES5B	Fenestrations	Windows	Includes work on exterior fenestration closure & related components including glass/metal/wood curtain walls, fixed or operable window sashes, glazing, frames, sills, casings, stools, seats, coatings, treatments, screens, storm windows, etc.
ES6A	General	Attached Structure	Includes work on attached exterior structure components not normally considered in above categories including porches, stoops, decks, monumental entrance stairs, cupolas, towers, etc.
ES6B	General	Areaways	Includes work on attached grade level or below structural features including subterranean light wells, areaways, basement access stairs, etc.
ES6C	General	Trim	Includes work on ornamental exterior (generally non-structural) elements including beltlines, quoins, porticos, soffits, cornices, moldings, trim, etc.
ES6D	General	Superstructure	Includes finish and structural work on non-standard structures with exposed load-bearing elements such as stadiums, bag houses, bleachers, freestanding towers, etc.
ES6E	General	Other	Includes any exterior work not specifically categorized elsewhere including finish and structural work on freestanding boiler stacks.

System: HVAC

Code	Component Description	Element Description	Definition
HV1A	Heating	Boilers/Stacks/Controls	Includes boilers for heating purposes including their related stacks, flues, and controls
HV1B	Heating	Radiators/Convectors	Includes cast iron radiators, fin tube radiators, baseboard radiators, etc.
HV1C	Heating	Furnace	Includes furnaces and their related controls, flues, etc.
HV1D	Heating	Fuel Supply/Storage	Includes storage and/or distribution of fuel for heating purposes, including tanks and piping networks and related leak detection/monitoring
HV2A	Cooling	Chillers/Coolers	Includes chiller units for production of chilled water for cooling purposes, related controls (not including MOAs for CFC compliance)
HV2B	Cooling	Heat Rejection	Includes repair/replacement of cooling towers, dry coolers, air-cooling and heat rejection (includes connection of once-through system to cooling tower)
HV3A	Heating/Cooling	System Retrofit/Replace	Includes major retrofit of HVAC systems
HV3B	Heating/Cooling	Water Treatment	Includes treatment of hot water, chilled water, steam, condenser water, etc.
HV3C	Heating/Cooling	Package/Self-contained Units	Includes repair/replacement of self-contained/package type units including stand-up units, rooftop units, window units, etc., both air conditioners and heat pumps
HV3D	Heating/Cooling	Conventional Split Systems	Includes repair, installation or replacement of conventional split systems; both air conditioners and heat pumps, including independent component replacement of compressors and condensers
HV4A	Air Moving/Ventilation	Air Handlers/Fan Units	Includes air handlers & coils, fan coil units, unit ventilators, filtration upgrades, etc., not including package/self-contained units, split systems or other specifically categorized systems
HV4B	Air Moving/Ventilation	Exhaust Fans	Includes exhaust fan systems including fans, range and fume hoods, controls and related ductwork

HV4C	Air Moving/Ventilation	Other Fans	Includes supply, return, or any other fans not incorporated into a component categorized elsewhere
HV4D	Air Moving/Ventilation	Air Distribution Network	Include repair, replacement or cleaning of air distribution network including ductwork, terminal reheat/cool, VAV units, induction points, power induction units, insulation, dampers, linkages, etc.
HV5A	Steam/Hydronic Distribution	Piping Network	Includes repair/replacement of piping networks for heating and cooling systems including pipe, fittings, insulation, related components, etc.
HV5B	Steam/Hydronic Distribution	Pumps	Includes repair or replacement of pumps used in heating and cooling systems, related control components, etc. Includes shell and tube heat exchangers and plate heat exchangers for heating and cooling
HV5C	Steam/Hydronic Distribution	Heat Exchange	Includes repair or replacement of pumps used in heating and cooling systems, related control components, etc.
HV6A	Controls	Complete System Upgrade	Includes replacement of HVAC control systems
HV6B	Controls	Modifications/Repairs	Includes repair or modification of HVAC control systems
HV6C	Controls	Air Compressors/Dryers	Includes repair or modification of control air compressors and dryers
HV7A	Infrastructure	Steam/Hot Water Distribution	Includes generation of central steam and/or hot water including boilers and related components
HV7B	Infrastructure	Steam/Hot Water Distribution	Includes distribution system for central hot water and/or steam
HV7C	Infrastructure	Chilled Water Generation	Includes generation of central chilled water including chillers and related components
HV7D	Infrastructure	Chilled Water Distribution	Includes distribution system for central chilled water
HV7E	Infrastructure	Tunnels/Manholes/Trenches	Includes repairs, installation, replacement of utility system access chambers
HV8A	General	CFC Compliance	Includes chiller conversion/replacements for CFC regulatory compliance, monitoring, etc.
HV8B	General	Other	Includes HVAC issues not catalogued elsewhere

System: Electrical

Code	Component Description	Element Description	Definition
EL1A	Incoming Service	Transformer	Includes main building service transformer
EL1B	Incoming Service	Disconnects	Includes main building disconnect and switchgear
EL1C	Incoming Service	Feeders	Includes Incoming service feeders, complete incoming service upgrades, including transformers, feeders and main distribution panels are catalogued here
EL1D	Incoming Service	Metering	Includes installation of meters to record consumption and/or demand
EL2A	Main Distribution Panels	Condition Upgrade	Includes main distribution upgrade due to deficiencies in condition
EL2B	Main Distribution Panels	Capacity Upgrade	Includes main distribution upgrades due to inadequate capacity
EL3A	Secondary Distribution	Step Down Transformers	Includes secondary distribution step-down and isolation transformers
EL3B	Secondary Distribution	Distribution Network	Includes conduit, conductors, sub-distribution panels, switches, outlets, etc. Complete interior rewiring of a facility is catalogued here
EL3C	Secondary Distribution	Motor Controllers	Includes mechanical equipment motor starters and control centers
EL4A	Devices and Fixtures	Exterior Lighting	Includes exterior building lighting fixtures including supply conductors and conduit
EL4B	Devices and Fixtures	Interior Lighting	Includes interior lighting fixtures (also system wide emergency lighting) including supply conductors and conduits
EL4C	Devices and Fixtures	Lighting Controllers	Includes motion sensors, photocell controllers, lighting contractors, etc.
EL4D	Devices and Fixtures	GFCI Protection	Includes ground fault protection including GFCI receptacles and breakers
EL4E	Devices and Fixtures	Lighting Protection	Includes lighting arrestation systems including air terminals and grounding conductors
EL5A	Emergency Power system	Generation/Distribution	Includes generators, central battery banks, transfer switches, emergency power grid, etc.
EL6A	Systems	UPS/DC Power Supply	Includes uninterruptible power supply systems and DC motor-generator sets and distribution systems
EL7A	Infrastructure	Above Ground Transmission	Includes poles, towers, conductors, insulators, fuses, disconnects, etc.
EL7B	Infrastructure	Underground Transmission	Includes direct buried feeders, ductbanks, conduit, manholes, feeders, switches, disconnects, etc.
EL7C	Infrastructure	Substations	Includes incoming feeders, breakers, buses, switchgear, meters, CT's, PT's, battery systems, capacitor banks, and all associated auxiliary equipment
EL7D	Infrastructure	Distribution Switchgear	Includes stand-alone sectionalizing switches, distribution switchboards, etc.
EL7F	Infrastructure	Area and Street Lighting	Includes area and street lighting systems including stanchions, fixtures, feeders, etc.
EL8A	General	Other	Includes electrical system components not catalogued elsewhere

System: Interior Systems

Code	Component Description	Element Description	Definition
1S1A	Floor	Finishes-Dry	Includes R & R of carpet, hardwood strip flooring, concrete coating, vinyl, linoleum & tile, marble, terrazzo, rubber flooring, underlayment in predominantly dry areas ("dry" includes non-commercial kitchens)
1S1B	Floor	Finishes-Wet	Includes flooring finish/underlayment work in predominantly "wet" areas including work with linoleum, rubber, terrazzo, concrete coating, quarry tile, ceramic tile, epoxy aggregate, etc.
1S2A	Partitions	Structure	Includes structural work on full height permanent interior partitions including wood/metal stud & drywall systems, CMU systems, structural brick, tile, glass block, etc.
1S2B	Partitions	Finishes	Includes work on full height permanent interior partitions including R & R to gypsum board, plaster, lath, wood paneling, acoustical panels, wall coverings, column coverings, tile, paint, etc.
1S3A	Ceilings	Repair	Includes repair of interior ceilings (<40% of total) including tiles, gypsum board, plaster, paint, etc.

1S3B	Ceilings	Replacement	Includes major refurbishments (>40% of total) to interior ceiling systems including grid system replacements, structural framing, new suspended systems, paint, plastering, etc.
1S4A	Doors	General	Includes any work on interior non-fire rated doors, roll-up counter doors, mechanical/plumbing access doors, and all door hardware (except for reasons of access improvement)
1S5A	Stairs	Finish	Includes any finish restorative work to stair tower walking surfaces including replacement of rubber treads, safety grips, nosings, etc. (except as required to accommodate disabled persons)
1S6A	General	Molding	Includes R & R work to interior trim/molding systems including rubber/vinyl/wood base, crown/chair/ornamental moldings, cased openings, etc.
1S6B	General	Cabinetry	Includes R & R work to interior casework systems including cabinets, countertops, wardrobes, lockers, mailboxes, built-in bookcases, lab/work benches, reagent shelving, etc. (except as required for access by the disabled)
1S6C	General	Screening	Includes work on temporary or partial height partitioning systems including toilet partitions, urinal/vanity screens, etc.
1S6D	General	Other	Includes any work on interior elements not logically or specifically categorized elsewhere including light coves, phone booths, interior light wells, etc.

System: Plumbing Systems

Code	Component Description	Element Description	Definition
PL1A	Domestic Water	Piping Network	Includes repair or replacement of domestic water supply piping network, insulation, hangers, etc.
PL1B	Domestic Water	Pumps	Includes domestic water booster pumps, circulating pumps, related controls, etc.
PL1C	Domestic Water	Storage/Equipment	Includes equipment or vessels for storage or treatment of domestic water
PL1D	Domestic Water	Metering	Includes installation, repair or replacement of water meters
PL1E	Domestic Water	Heating	Includes domestic water heaters including gas, oil, and electric water heaters, shell and tube heat exchangers, tank type and instantaneous
PL1F	Domestic Water	Cooling	Includes central systems for cooling and distributing drinking water
PL1G	Domestic Water	fixtures	Includes plumbing fixtures including sinks, drinking fountains, water closets, urinals, etc.
PL1H	Domestic Water	Conservation	Includes alterations made to the water distribution system to conserve water
PL1I	Domestic Water	Backflow Protection	Includes backflow protection devices including backflow preventers, vacuum breakers, etc.
PL2A	Wastewater	Piping Network	Includes repair or replacement of building wastewater piping network
PL2B	Wastewater	Pumps	Includes pump systems used to lift wastewater including sewage ejectors and other sump systems
PL3A	Special Systems	Process Gas/Fluids	Includes generation and/or distribution of process steam, compressed air, natural and LP gas, process water, vacuum, etc.
PL4A	Infrastructure	Potable Water Storage/Treatment	Includes storage and treatment of potable water for distribution
PL4B	Infrastructure	Industrial Water Distribution Treatment	Includes storage and treatment of industrial water for distribution
PL4C	Infrastructure	Sanitary Water Collection	Includes sanitary water collection systems, sanitary sewer systems, including combined systems
PL4D	Infrastructure	Storm Water Collection	Includes storm water collection systems, storm sewer systems, storm water only
PL4E	Infrastructure	Potable Water Distribution	Includes potable water distribution network
PL4F	Infrastructure	Wastewater Treatment	Includes wastewater treatment plants, associated equipment, etc.
PL5A	General	Other	Includes plumbing issues not categorized elsewhere

System: Site

Code	Component Description	Element Description	Definition
SI1A	Access	Pedestrian	Includes paved pedestrian surfaces including walks, site stairs, step ramps, paths, pedestrian signage, sidewalk bridges/canopies, pedestrian plaza/mall areas, etc.
SI1B	Access	Vehicular	Includes paved vehicular surfaces including roads, paths, curbs, guards, bollards, bridges, skyways, joints, shoulder work, culverts, ditches, vehicular signage, etc.
SI2A	Landscape	Grade/Flora	Includes landscape related work including new grass/turf refurbishment, grade improvements, catch basins, swales, berms, pruning, new ornamental flora, etc.
SI3A	Hardscape	Structure	Includes permanent hard site features, predominantly ornamental, including terraces, fences, statues, freestanding signage, fountains, benches, etc.
SI4A	General	Other	Includes other site work not specifically categorized elsewhere.

System: Vertical Transportation

Code	Component Description	Element Description	Definition
VT1A	Machine Room	General	Includes machine worm gear, thrust bearing, brake, motors, sheaves, generator, controller, selector, governor, pumps, valves, oil, access, lighting, ventilation, floor
VT2A	Car	General	Includes position indicator, lighting, floor, gate-doors, operation devices, safeties, safety shoe, light ray/detection, emergency light, fire fighter service, car top, door operator, stop switch, car frame, car guides, sheaves, phone, ventilation
VT3A	Hoistway	General	Includes enclosure, fascia, interlock, doors, hangers, closers, sheaves, rails, hoistway switches, ropes, traveling cables, selector tape, weights, compensation
VT4A	Hall Fixtures	General	Includes operating panel, position indicator, hall buttons, lobby panel, hall lanterns, fire fighter service, audible signals, card/key access
VT5A	Pit	General	Includes buffers, guards, sheaves, hydro-packing, floor lighting, safety controls
VT6A	Operating Condition	General	Includes door opening time, door close time, door thrust, acceleration, deceleration, leveling, dwell time, speed, OFR time, nudging
VT7A	General	Other	Includes general information/projects relating to vertical transportation system components

DOCUMENT 000115 - LIST OF DRAWING SHEETS

1.1 LIST OF DRAWINGS

- A. Drawings: Drawings consist of the Contract Drawings and other drawings listed on the Table of Contents page of the separately bound drawing set titled SCO CD Submission Drawings , dated 10/02/24 , as modified by subsequent Addenda and Contract modifications.
- B. List of Drawings: Drawings consist of the following Contract Drawings and other drawings of type indicated:
 - 1. A0.1 COVERSHEET .
 - 2. A0.2 APPENDIX B
 - 3. A0.3 APPENDIX B CONT'D + LIFE SAFETY PLAN
 - 4. AB-1 ASBESTOS ABATEMENT PLAN - LEVEL 1
 - 5. AB-2 ASBESTOS ABATEMENT PLAN - LEVEL 2
 - 6. AB-3 ASBESTOS ABATEMENT PLAN - LEVEL 3
 - 7. A1.0 FLOOR 1 - BASEMENT DEMOLITION PLAN
 - 8. A1.1 FLOOR 2 - DEMO PLAN
 - 9. A1.2 FLOOR 3 - DEMO PLAN
 - 10. A1.3 ROOF - DEMO PLAN
 - 11. A2.0A FLOOR 1 - BASEMENT FLOOR PLAN WITH ALTERNATES
 - 12. A2.0B FLOOR 1 - BASEMENT FLOOR PLAN BASE BID
 - 13. A2.1 FLOOR 2 - FLOOR PLAN
 - 14. A2.2 FLOOR 3 - FLOOR PLAN
 - 15. A2.3 ROOF PLAN
 - 16. A2.4 FLOOR 1 - BASEMENT REFLECTED CEILING PLAN
 - 17. A3.1 ELEVATIONS + WINDOW SCHEDULE
 - 18. A3.2 INTERIOR ELEVATIONS + BUILDING SECTIONS
 - 19. A3.3 INTERIOR ELEVATIONS + BUILDING SECTIONS
 - 20. A5.1 SECTION DETAILS
 - 21. A5.2 SECTION DETAILS
 - 22. A5.3 SECTION DETAILS
 - 23. A5.4 SECTION DETAILS
 - 24. A6.1 PLAN DETAILS + PARTITION SCHEDULE
 - 25. S001 GENERAL NOTES
 - 26. S002 GENERAL NOTES
 - 27. S010 SPECIAL INSPECTIONS
 - 28. S111 FOUNDATION PLAN
 - 29. S121 LEVEL 2 FRAMING PLAN
 - 30. S131 LEVEL 3 FRAMING PLAN
 - 31. S141 ROOF FRAMING PLAN
 - 32. S301 SECTIONS
 - 33. S501 TYPICAL DETAILS
 - 34. S502 TYPICAL DETAILS
 - 35. P0.01 PLUMBING LEGEND AND NOTES
 - 36. P2.00 FLOOR 1 - PLUMBING NEW WASTE AND VENT PLAN
 - 37. P2.01 FLOOR 1 - PLUMBING NEW WATER PLAN
 - 38. P5.00 PLUMBING DETAILS

- 39. P5.01 PLUMBING FIRE PENETRATION DETAILS
- 40. M0.01 MECHANICAL LEGEND AND NOTES
- 41. M0.02 MECHANICAL SCHEDULES
- 42. M1.00 FLOOR 1 - MECHANICAL DEMOLITION PLAN
- 43. M1.10 FLOOR 2 - MECHANICAL DEMOLITION PLAN
- 44. M1.20 FLOOR 3 - MECHANICAL DEMOLITION PLAN
- 45. M2.00 FLOOR 1 - MECHANICAL NEW DUCTWORK PLAN
- 46. M2.01 FLOOR 1 - MECHANICAL NEW PIPING PLAN
- 47. M2.10 FLOOR 2 - MECHANICAL NEW WORK PLAN
- 48. M2.20 FLOOR 3 - MECHANICAL NEW WORK PLAN
- 49. M2.30 ROOF - MECHANICAL NEW WORK PLAN
- 50. M3.00 ENLARGED MECHANICAL PLANS AND 3D VIEWS
- 51. M3.01 MECHANICAL SECTIONS
- 52. M4.00 MECHANICAL PIPING SCHEMATICS
- 53. M4.10 MECHANICAL CONTROL SCHEMATICS
- 54. M4.20 MECHANICAL OPERATING SEQUENCES
- 55. M5.00 MECHANICAL DETAILS
- 56. M5.01 MECHANICAL DETAILS
- 57. M5.02 MECHANICAL DETAILS
- 58. M5.03 MECHANICAL DETAILS
- 59. M5.04 MECHANICAL DETAILS
- 60. E0.01 ELECTRICAL SYMBOLS, ABBREVIATIONS, NOTES
- 61. E1.00 FLOOR 1 - ELECTRICAL DEMOLITION PLAN
- 62. E1.01 FLOOR 2 - ELECTRICAL DEMOLITION PLAN
- 63. E1.02 FLOOR 3 - ELECTRICAL DEMOLITION PLAN
- 64. E2.00 FLOOR 1 - ELECTRICAL NEW WORK PLAN
- 65. E2.01 FLOOR 1 - MECHANICAL ELECTRICAL NEW WORK PLAN
- 66. E2.02 FLOOR 1 - LIGHTING NEW WORK PLAN
- 67. E2.10 FLOOR 2 - ELECTRICAL NEW WORK PLAN
- 68. E2.20 FLOOR 3 - ELECTRICAL NEW WORK PLAN
- 69. E2.30 ROOF - ELECTRICAL NEW WORK PLAN
- 70. E3.00 ELECTRICAL DETAILS
- 71. E3.01 ELECTRICAL DETAILS
- 72. E3.02 ELECTRICAL DETAILS
- 73. E3.03 ELECTRICAL DETAILS
- 74. E3.04 ELECTRICAL DETAILS
- 75. E4.00 ELECTRICAL RISERS
- 76. E5.00 ELECTRICAL SCHEDULES
- 77. E5.01 ELECTRICAL SCHEDULES
- 78. FA2.01 FLOOR 1 - FIRE ALARM NEW WORK PLAN
- 79. FA2.02 FLOOR 1 - FIRE ALARM NEW WORK PLAN

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