



**PROJECT MANUAL**

**WILLAMS BRICE STADIUM  
ROOF REPAIR EAST GROUND LEVEL  
UNIVERSITY OF SOUTH CAROLINA**

**CP00405532**

**A/E COMMISSION NO. 14102**

**FEBRUARY, 2015**



**JUMPER CARTER SEASE/ARCHITECTS, P.A.  
412 MEETING STREET \* WEST COLUMBIA, S.C. 29169**



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**PROJECT NUMBER:** CP00405532

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SE-310

## INVITATION FOR CONSTRUCTION SERVICES

PROJECT NAME: WBS Replace Roofing for East Ground Level Custodial and Facility Supply AreaPROJECT NUMBER: CP00405532PROJECT LOCATION: University of South CarolinaBID SECURITY REQUIRED? Yes  No PERFORMANCE BOND REQUIRED? Yes  No PAYMENT BOND REQUIRED? Yes  No 

NOTE: Contractor may be subject to a performance appraisal at the close of the project.

CONSTRUCTION COST RANGE: \$ 130,000-\$170,000DESCRIPTION OF PROJECT: Replace the roof and other related improvements in the Custodial Supply room at Williams-Brice Stadium. Scope of work includes required abatement. Small and minority business participation is encouraged. Bidders shall obtain bid documents from the USC website. Only one official site visit to follow the pre-bid meeting.BIDDING DOCUMENTS/PLANS MAY BE OBTAINED FROM: purchasing.sc.edu. "Facilities/Construction Solicitations/Awards."PLAN DEPOSIT AMOUNT: \$ \$0.00 IS DEPOSIT REFUNDABLE Yes  No  N/A Bidders must obtain Bidding Documents/Plans from the above listed source(s) to be listed as an official plan holder. Only those Bidding Documents/Plans obtained from the above listed source(s) are official. Bidders that rely on copies of Bidding Documents/Plans obtained from any other source do so at their own risk. All written communications with official plan holders & bidders WILL  WILL NOT  be via email or website posting.IN ADDITION TO THE ABOVE OFFICIAL SOURCE(S), BIDDING DOCUMENTS/PLANS ARE ALSO AVAILABLE AT:  
N/A*All questions & correspondence concerning this Invitation shall be addressed to the A-E.*A-E NAME: Jumper Carter Sease/Architects, PAA-E CONTACT: Mr. M. Keith Myhand, AIAA-E ADDRESS: Street/PO Box: 412 Meeting StreetCity: ColumbiaState: SCZIP: 29169-EMAIL: kmyhand@jcsarchitect.comTELEPHONE: 803-791-1020FAX: 803-791-1022AGENCY: University of South CarolinaAGENCY PROJECT COORDINATOR: Aimee RishADDRESS: Street/PO Box: 743 Greene StreetCity: ColumbiaState: SCZIP: 29208-EMAIL: arish@fmc.sc.eduTELEPHONE: 803-777-2261FAX: 803-777-7334PRE-BID CONFERENCE: Yes  No MANDATORY ATTENDANCE: Yes  No PRE-BID DATE: 3/26/2015TIME: 3:00PMPLACE: 743 Greene St, Cola SC 29208; Conf Room 053BID CLOSING DATE: 4/8/2015TIME: 4:00PMPLACE: 743 Greene St, Cola SC 29208; Conf Room 053

BID DELIVERY ADDRESSES:

HAND-DELIVERY:

Attn: Aimee Rish "Bid Enclosed"743 Greene StreetColumbia, SC 29208

MAIL SERVICE:

Attn: Aimee Rish "Bid Enclosed"743 Greene StreetColumbia, SC 29208

IS PROJECT WITHIN AGENCY CONSTRUCTION CERTIFICATION? (Agency MUST check one)

Yes No 

APPROVED BY: \_\_\_\_\_

*(OSE Project Manager)*

DATE: \_\_\_\_\_

## Section AIA A701-1997 Instructions to Bidders

Instructions to Bidders, AIA Document A701-1997 Edition, is incorporated into the Contract Documents by reference herein.

Copies of the Instructions to Bidders, AIA Document A701-1997, may be obtained from the American Institute of Architects, 1735 New York Avenue, N.W., Washington, DC 20006, or local AIA offices and reprographic offices.

End of Section AIA A701-1997



# OSE FORM 00201

## STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

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**AGENCY:** University of South Carolina

**PROJECT NAME:** WBS - Replace Roofing for East Ground Level Custodial and Facilities Supply Area

**PROJECT NUMBER:** CP00405532

**PROJECT LOCATION:** University of South Carolina

**PROCUREMENT OFFICER:** Aimee Rish

### 1. STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

- 1.1 These Standard Supplemental Instructions to Bidders amend or supplement Instructions to Bidders (AIA Document A701-1997) and other provisions of Bidding and Contract Documents as indicated below.
- 1.2 Compliance with these Standard Supplemental Instructions is required by the Office of State Engineer (OSE) for all State projects when competitive sealed bidding is used as the method of procurement.
- 1.3 All provisions of the A701-1997, which are not so amended or supplemented, remain in full force and effect.
- 1.4 Bidders are cautioned to carefully examine the Bidding and Contract Documents for additional instructions or requirements.

### 2. MODIFICATIONS TO A701-1997

#### 2.1 *Delete Section 1.1 and insert the following:*

**1.1** Bidding Documents, collectively referred to as the **Invitation for Bids**, include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement, Instructions to Bidders (A-701), Supplementary Instructions to Bidders, the bid form (SE-330), the Notice of Intent to Award (SE-370), and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda issued prior to execution of the Contract, and other documents set forth in the Bidding Documents. Any reference in this document to the Agreement between the Owner and Contractor, AIA Document A101, or some abbreviated reference thereof, shall mean the AIA A101, 2007 Edition as modified by OSE Form 00501 – Standard Modification to Agreement between Owner and Contractor. Any reference in this document to the General Conditions of the Contract for Construction, AIA Document A201, or some abbreviated reference thereof, shall mean the AIA A201, 2007 Edition as modified by OSE Form 00811 – Standard Supplementary Conditions.

**2.2** *In Section 1.8, delete the words “and who meets the requirements set forth in the Bidding Documents”.*

**2.3** *In Section 2.1, delete the word “making” and substitute the word “submitting.”*

**2.4** *In Section 2.1.1:*

*After the words “Bidding Documents,” delete the word “or” and substitute the word “and.”*

*Insert the following at the end of this section:*

Bidders are expected to examine the Bidding Documents and Contract Documents thoroughly and should request an explanation of any ambiguities, discrepancies, errors, omissions, or conflicting statements. Failure to do so will be at the Bidder’s risk. Bidder assumes responsibility for any patent ambiguity that Bidder does not bring to the Owner’s attention prior to bid opening.

**2.5** *In Section 2.1.3, insert the following after the term “Contract Documents” and before the period:*

and accepts full responsibility for any pre-bid existing conditions that would affect the Bid that could have been ascertained by a site visit. As provided in Regulation 19-445.2042(B), a bidder’s failure to attend an advertised pre-bid conference will not excuse its responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the State.

**2.6** *Insert the following Sections 2.2 through 2.6:*

#### **2.2 CERTIFICATION OF INDEPENDENT PRICE DETERMINATION**

GIVING FALSE, MISLEADING, OR INCOMPLETE INFORMATION ON THIS CERTIFICATION MAY RENDER YOU SUBJECT TO PROSECUTION UNDER SECTION 16-9-10 OF THE SOUTH CAROLINA CODE OF LAWS AND OTHER APPLICABLE LAWS.



**OSE FORM 00201****STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

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- A. By submitting an bid, the bidder certifies that—
1. The prices in this bid have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other bidder or competitor relating to—
    - a. Those prices;
    - b. The intention to submit an bid; or
    - c. The methods or factors used to calculate the prices offered.
  2. The prices in this bid have not been and will not be knowingly disclosed by the bidder, directly or indirectly, to any other bidder or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and
  3. No attempt has been made or will be made by the bidder to induce any other concern to submit or not to submit a bid for the purpose of restricting competition.
- B. Each signature on the bid is considered to be a certification by the signatory that the signatory—
1. Is the person in the bidder's organization responsible for determining the prices being offered in this bid, and that the signatory has not participated and will not participate in any action contrary to paragraphs A.1 through A.3 of this certification; or
  2.
    - a. Has been authorized, in writing, to act as agent for the bidder's principals in certifying that those principals have not participated, and will not participate in any action contrary to paragraphs A.1 through A.3 of this certification [As used in this subdivision B.2.a, the term "principals" means the person(s) in the bidder's organization responsible for determining the prices offered in this bid];
    - b. As an authorized agent, does certify that the principals referenced in subdivision B.2.a of this certification have not participated, and will not participate, in any action contrary to paragraphs A.1 through A.3 of this certification; and
    - c. As an agent, has not personally participated, and will not participate, in any action contrary to paragraphs A.1 through A.3 of this certification.
- C. If the bidder deletes or modifies paragraph (a)(2) of this certification, the bidder must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure.

**2.3 DRUG FREE WORKPLACE**

By submitting a bid, the Bidder certifies that Bidder will maintain a drug free workplace in accordance with the requirements of Title 44, Chapter 107 of South Carolina Code of Laws, as amended.

**2.4 CERTIFICATION REGARDING DEBARMENT AND OTHER RESPONSIBILITY MATTERS**

- A. 1. By submitting an Bid, Bidder certifies, to the best of its knowledge and belief, that-
- a. Bidder and/or any of its Principals-
    - (i) Are not presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any state or federal agency;
    - (ii) Have not, within a three-year period preceding this bid, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of bids; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and
    - (iii) Are not presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in paragraph A.1.a.(ii) of this provision.
  - b. Bidder has not, within a three-year period preceding this bid, had one or more contracts terminated for default by any public (Federal, state, or local) entity.
2. "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).
- B. Bidder shall provide immediate written notice to the Procurement Officer if, at any time prior to contract award, Bidder learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- C. If Bidder is unable to certify the representations stated in paragraphs A.1, Bidder must submit a written explanation regarding its inability to make the certification. The certification will be considered in connection with a review of the Bidder's responsibility. Failure of the Bidder to furnish additional information as requested by the Procurement Officer may render the Bidder nonresponsible.

**OSE FORM 00201****STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph A. of this provision. The knowledge and information of a Bidder is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

- D. The certification in paragraph A. of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Bidder knowingly or in bad faith rendered an erroneous certification, in addition to other remedies available to the State, the Procurement Officer may terminate the contract resulting from this solicitation for default.

**2.5 ETHICS CERTIFICATE**

By submitting a bid, the bidder certifies that the bidder has and will comply with, and has not, and will not, induce a person to violate Title 8, Chapter 13 of the South Carolina Code of Laws, as amended (ethics act). The following statutes require special attention: Section 8-13-700, regarding use of official position for financial gain; Section 8-13-705, regarding gifts to influence action of public official; Section 8-13-720, regarding offering money for advice or assistance of public official; Sections 8-13-755 and 8-13-760, regarding restrictions on employment by former public official; Section 8-13-775, prohibiting public official with economic interests from acting on contracts; Section 8-13-790, regarding recovery of kickbacks; Section 8-13-1150, regarding statements to be filed by consultants; and Section 8-13-1342, regarding restrictions on contributions by contractor to candidate who participated in awarding of contract. The state may rescind any contract and recover all amounts expended as a result of any action taken in violation of this provision. If contractor participates, directly or indirectly, in the evaluation or award of public contracts, including without limitation, change orders or task orders regarding a public contract, contractor shall, if required by law to file such a statement, provide the statement required by Section 8-13-1150 to the procurement officer at the same time the law requires the statement to be filed.

**2.6 RESTRICTIONS APPLICABLE TO BIDDERS & GIFTS**

Violation of these restrictions may result in disqualification of your bid, suspension or debarment, and may constitute a violation of the state Ethics Act. (a) After issuance of the solicitation, ***bidder agrees not to discuss this procurement activity in any way with the Owner or its employees, agents or officials.*** All communications must be solely with the Procurement Officer. This restriction may be lifted by express written permission from the Procurement Officer. This restriction expires once a contract has been formed. (b) Unless otherwise approved in writing by the Procurement Officer, ***bidder agrees not to give anything to the Owner, any affiliated organizations, or the employees, agents or officials of either, prior to award.*** (c) Bidder acknowledges that the policy of the State is that a governmental body should not accept or solicit a gift, directly or indirectly, from a donor if the governmental body has reason to believe the donor has or is seeking to obtain contractual or other business or financial relationships with the governmental body. Regulation 19-445.2165(C) broadly defines the term donor.

**2.7 IRAN DIVESTMENT ACT CERTIFICATION**

(a) The Iran Divestment Act List is a list published by the Board pursuant to Section 11-57-310 that identifies persons engaged in investment activities in Iran. Currently, the list is available at the following URL: <http://procurement.sc.gov/PS/PS-iran-divestment.phtm>(.) Section 11-57-310 requires the government to provide a person ninety days written notice before he is included on the list. The following representation, which is required by Section 11-57-330(A), is a material inducement for the State to award a contract to you. (b) By signing your Offer, you certify that, as of the date you sign, you are not on the then-current version of the Iran Divestment Act List. (c) You must notify the Procurement Officer immediately if, at any time before posting of a final statement of award, you are added to the Iran Divestment Act List.

**2.7 Delete Section 3.1.1 and substitute the following:**

**3.1.1** Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Advertisement in the number and for the deposit sum, if any, stated therein. If so provided in the Advertisement, the deposit will be refunded to all plan holders who return the Bidding Documents in good condition within ten days after receipt of Bids. The cost of replacement of missing or damaged documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the Bidding Documents and the Bidder's deposit will be refunded.

**2.8 Delete the language of Section 3.1.2 and insert the word "Reserved."****2.9 In Section 3.1.4, delete the words "and Architect may make" and substitute the words "has made."****2.10 Insert the following Section 3.1.5**

**3.1.5** All persons obtaining Bidding Documents from the issuing office designated in the Advertisement shall provide that office with Bidder's contact information to include the Bidder's name, telephone number, mailing address, and email address.

**OSE FORM 00201****STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

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**2.11** *In Section 3.2.2:*

*Delete the words “and Sub-bidders”*

*Delete the word “seven” and substitute the word “ten”*

**2.12** *In Section 3.2.3:*

*In the first Sentence, insert the word “written” before the word “Addendum.”*

*Insert the following at the end of the section:*

As provided in Regulation 19-445.2042(B), nothing stated at the pre-bid conference shall change the Bidding Documents unless a change is made by written Addendum.

**2.13** *Insert the following at the end of Section 3.3.1:*

Reference in the Bidding Documents to a designated material, product, thing, or service by specific brand or trade name followed by the words “or equal” and “or approved equal” shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition.

**2.14** *Delete Section 3.3.2 and substitute the following:*

**3.3.2** No request to substitute materials, products, or equipment for materials, products, or equipment described in the Bidding Documents and no request for addition of a manufacturer or supplier to a list of approved manufacturers or suppliers in the Bidding Documents will be considered prior to receipt of Bids unless written request for approval has been received by the Architect at least ten days prior to the date for receipt of Bids established in the Invitation for Bids. Any subsequent extension of the date for receipt of Bids by addendum shall not extend the date for receipt of such requests unless the addendum so specifies. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work, including changes in the work of other contracts that incorporation of the proposed substitution would require, shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

**2.15** *Delete Section 3.4.3 and substitute the following:*

**3.4.3** Addenda will be issued no later than 120 hours prior to the time for receipt of Bids except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

**2.16** *Insert the following Sections 3.4.5 and 3.4.6:*

**3.4.5** When the date for receipt of Bids is to be postponed and there is insufficient time to issue a written Addendum prior to the original Bid Date, Owner will notify prospective Bidders by telephone or other appropriate means with immediate follow up with a written Addendum. This Addendum will verify the postponement of the original Bid Date and establish a new Bid Date. The new Bid Date will be no earlier than the fifth (5th) calendar day after the date of issuance of the Addendum postponing the original Bid Date.

**3.4.6** If an emergency or unanticipated event interrupts normal government processes so that bids cannot be received at the government office designated for receipt of bids by the exact time specified in the solicitation, the time specified for receipt of bids will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal government processes resume. In lieu of an automatic extension, an Addendum may be issued to reschedule bid opening. If state offices are closed at the time a pre-bid or pre-proposal conference is scheduled, an Addendum will be issued to reschedule the conference.

**2.17** *In Section 4.1.1, delete the word “forms” and substitute the words “SE-330 Bid Form.”***2.18** *Delete Section 4.1.2 and substitute the following:*

**4.1.2** Any blanks on the bid form to be filled in by the Bidder shall be legibly executed in a non-erasable medium. Bids shall be signed in ink or other indelible media.

**2.19** *Delete Section 4.1.3 and substitute the following:*

**4.1.3** Sums shall be expressed in figures.

**2.20** *Insert the following at the end of Section 4.1.4:*

Bidder shall not make stipulations or qualify his bid in any manner not permitted on the bid form. An incomplete Bid or information not requested that is written on or attached to the Bid Form that could be considered a qualification of the Bid, may be cause for rejection of the Bid.

**OSE FORM 00201****STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

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**2.21** *Delete Section 4.1.5 and substitute the following:*

**4.1.5** All requested Alternates shall be bid. The failure of the bidder to indicate a price for an Alternate shall render the Bid non-responsive. Indicate the change to the Base Bid by entering the dollar amount and marking, as appropriate, the box for "ADD TO" or "DEDUCT FROM". If no change in the Base Bid is required, enter "ZERO" or "No Change." For add alternates to the base bid, Subcontractor(s) listed on page BF-2 of the Bid Form to perform Alternate Work shall be used for both Alternates and Base Bid Work if Alternates are accepted.

**2.22** *Delete Section 4.1.6 and substitute the following:*

**4.1.6** Pursuant to Title 11, Chapter 35, Section 3020(b)(i) of the South Carolina Code of Laws, as amended, Section 7 of the Bid Form sets forth a list of subcontractor specialties for which Bidder is required to identify only those subcontractors Bidder will use to perform the work of each listed specialty. Bidder must follow the Instructions in the Bid Form for filling out this section of the Bid Form. Failure to properly fill out Section 7 may result in rejection of Bidder's bid as non-responsive.

**2.23** *Delete Section 4.1.7 and substitute the following:*

**4.1.7** Each copy of the Bid shall state the legal name of the Bidder and the nature of legal form of the Bidder. Each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder.

**2.24** *Delete Section 4.2.1 and substitute the following:*

**4.2.1** If required by the Invitation for Bids, each Bid shall be accompanied by a bid security in an amount of not less than five percent of the Base Bid. The bid security shall be a bid bond or a certified cashier's check. The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and will, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty.

**2.25** *Delete Section 4.2.2 and substitute the following:*

**4.2.2** If a surety bond is required, it shall be written on AIA Document A310, Bid Bond, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney. The bid bond shall:

- .1** Be issued by a surety company licensed to do business in South Carolina;
- .2** Be issued by a surety company having, at a minimum, a "Best Rating" of "A" as stated in the most current publication of "Best's Key Rating Guide, Property-Casualty", which company shows a financial strength rating of at least five (5) times the contract price.
- .3** Be enclosed in the bid envelope at the time of Bid Opening, either in paper copy or as an electronic bid bond authorization number provided on the Bid Form and issued by a firm or organization authorized by the surety to receive, authenticate and issue binding electronic bid bonds on behalf the surety.

**2.26** *Delete Section 4.2.3 and substitute the following:*

**4.2.3** By submitting a bid bond via an electronic bid bond authorization number on the Bid Form and signing the Bid Form, the Bidder certifies that an electronic bid bond has been executed by a Surety meeting the standards required by the Bidding Documents and the Bidder and Surety are firmly bound unto the State of South Carolina under the conditions provided in this Section 4.2.

**2.27** *Insert the following Section 4.2.4:*

**4.2.4** The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until either (a) the Contract has been executed and performance and payment bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn or (c) all Bids have been rejected.

**2.28** *Delete Section 4.3.1 and substitute the following:*

**4.3.1** All copies of the Bid, the bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall, unless hand delivered by the Bidder, be addressed to the Owner's designated purchasing office as shown in the Invitation for Bids. The envelope shall be identified with the Project name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail or special delivery service (UPS, Federal Express, etc.), the envelope should be labeled "BID ENCLOSED" on the face thereof. Bidders hand delivering their Bids shall deliver Bids to the place of the Bid Opening as shown in the Invitation for Bids. Whether or not Bidders attend the Bid Opening, they

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shall give their Bids to the Owner's procurement officer or his/her designee as shown in the Invitation for Bids prior to the time of the Bid Opening.

**2.29** *Insert the following Section 4.3.6 and substitute the following:*

**4.3.5** The official time for receipt of Bids will be determined by reference to the clock designated by the Owner's procurement officer or his/her designee. The procurement officer conducting the Bid Opening will determine and announce that the deadline has arrived and no further Bids or bid modifications will be accepted. All Bids and bid modifications in the possession of the procurement officer at the time the announcement is completed will be timely, whether or not the bid envelope has been date/time stamped or otherwise marked by the procurement officer.

**2.30** *Delete Section 4.4.2 and substitute the following:*

**4.4.2** Prior to the time and date designated for receipt of Bids, a Bid submitted may be withdrawn in person or by written notice to the party receiving Bids at the place designated for receipt of Bids. Withdrawal by written notice shall be in writing over the signature of the Bidder.

**2.31** *In Section 5.1, delete everything following the caption "OPENING OF BIDS" and substitute the following:*

**5.1.1** Bids received on time will be publicly opened and will be read aloud. Owner will not read aloud Bids that Owner determines, at the time of opening, to be non-responsive. .

**5.1.2** At bid opening, Owner will announce the date and location of the posting of the Notice of Intended Award.

**5.1.3** Owner will send a copy of the final Bid Tabulation to all Bidders within ten (10) working days of the Bid Opening.

**5.1.4** If Owner determines to award the Project, Owner will, after posting a Notice of Intended Award, send a copy of the Notice to all Bidders.

**5.1.5** If only one Bid is received, Owner will open and consider the Bid.

**2.32** *In Section 5.2, insert the section number "5.2.1" before the words of the "The Owner" at the beginning of the sentence.*

**2.33** *Insert the following Sections 5.2.2 and 5.2.3:*

**5.2.2** The reasons for which the Owner will reject Bids include, but are not limited to:

- .1** Failure by a Bidder to be represented at a Mandatory Pre-Bid Conference or site visit;
- .2** Failure to deliver the Bid on time;
- .3** Failure to comply with Bid Security requirements, except as expressly allowed by law;
- .4** Listing an invalid electronic Bid Bond authorization number on the bid form;
- .5** Failure to Bid an Alternate, except as expressly allowed by law;
- .6** Failure to list qualified Subcontractors as required by law;
- .7** Showing any material modification(s) or exception(s) qualifying the Bid;
- .8** Faxing a Bid directly to the Owner or their representative; or
- .9** Failure to include a properly executed Power-of-Attorney with the bid bond.

**5.2.3** The Owner may reject a Bid as nonresponsive if the prices bid are materially unbalanced between line items or sub-line items. A bid is materially unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated in relation to cost for other work, and if there is a reasonable doubt that the bid will result in the lowest overall cost to the Owner even though it may be the low evaluated bid, or if it is so unbalanced as to be tantamount to allowing an advance payment.

**2.34** *Delete Section 6.1 and substitute the following:*

**6.1 CONTRACTOR'S RESPONSIBILITY**

Owner will make a determination of Bidder's responsibility before awarding a contract. Bidder shall provide all information and documentation requested by the Owner to support the Owner's evaluation of responsibility. Failure of Bidder to provide requested information is cause for the Owner, at its option, to determine the Bidder to be non-responsive

**2.35** *Delete the language of Section 6.2 and insert the word "Reserved."*

**2.36** *Delete the language of Sections 6.3.2, 6.3.3, and 6.3.4 and insert the word "Reserved" after each Section Number.*

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2.37 *Insert the following Section 6.4*

**6.4 CLARIFICATION**

Pursuant to Section 11-35-1520(8), the Procurement Officer may elect to communicate with a Bidder after opening for the purpose of clarifying either the Bid or the requirements of the Invitation for Bids. Such communications may be conducted only with Bidders who have submitted a Bid which obviously conforms in all material aspects to the Invitation for Bids and only in accordance with Appendix D (Paragraph A(6)) to the Manual for Planning and Execution of State Permanent Improvement, Part II. Clarification of a Bid must be documented in writing and included with the Bid. Clarifications may not be used to revise a Bid or the Invitation for Bids. [Section 11-35-1520(8); R.19-445.2080]

2.38 *Delete Section 7.1.2 and substitute the following:*

**7.1.2** The performance and payment bonds shall conform to the requirements of Section 11.4 of the General Conditions of the Contract. If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid.

2.39 *Delete the language of Section 7.1.3 and insert the word "Reserved."*

2.40 *In Section 7.2, insert the words "CONTRACT, CERTIFICATES OF INSURANCE" into the caption after the word "Delivery."*

2.41 *Delete Section 7.2.1 and substitute the following:*

**7.2.1** After expiration of the protest period, the Owner will tender a signed Contract for Construction to the Bidder and the Bidder shall return the fully executed Contract for Construction to the Owner within seven days thereafter. The Bidder shall deliver the required bonds and certificate of insurance to the Owner not later than three days following the date of execution of the Contract. Failure to deliver these documents as required shall entitle the Owner to consider the Bidder's failure as a refusal to enter into a contract in accordance with the terms and conditions of the Bidder's Bid and to make claim on the Bid Security for re-procurement cost.

2.42 *Delete the language of Section 7.2.2 and insert the word "Reserved."*

2.43 *Delete the language of Article 8 and insert the following:*

Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on South Carolina Modified AIA Document A101, 2007, Standard Form of Agreement Between Owner and Contractor as modified by OSE Form 00501 – Standard Modification to Agreement Between Owner and Contractor.

2.44 *Insert the following Article 9:*

**ARTICLE 9 MISCELLANEOUS****9.1 NONRESIDENT TAXPAYER REGISTRATION AFFIDAVIT INCOME TAX WITHHOLDING  
IMPORTANT TAX NOTICE - NONRESIDENTS ONLY**

Withholding Requirements for Payments to Nonresidents: Section 12-8-550 of the South Carolina Code of Laws requires persons hiring or contracting with a nonresident conducting a business or performing personal services of a temporary nature within South Carolina to withhold 2% of each payment made to the nonresident. The withholding requirement does not apply to (1) payments on purchase orders for tangible personal property when the payments are not accompanied by services to be performed in South Carolina, (2) nonresidents who are not conducting business in South Carolina, (3) nonresidents for contracts that do not exceed \$10,000 in a calendar year, or (4) payments to a nonresident who (a) registers with either the S.C. Department of Revenue or the S.C. Secretary of State and (b) submits a Nonresident Taxpayer Registration Affidavit - Income Tax Withholding, Form I-312 to the person letting the contract.

For information about other withholding requirements (e.g., employee withholding), contact the Withholding Section at the South Carolina Department of Revenue at 803-898-5383 or visit the Department's website at: [www.sctax.org](http://www.sctax.org)

This notice is for informational purposes only. This Owner does not administer and has no authority over tax issues. All registration questions should be directed to the License and Registration Section at 803-898-5872 or to the South Carolina Department of Revenue, Registration Unit, Columbia, S.C. 29214-0140. All withholding questions should be directed to the Withholding Section at 803-898- 5383.

PLEASE SEE THE "NONRESIDENT TAXPAYER REGISTRATION AFFIDAVIT INCOME TAX WITHHOLDING" FORM (Available through SC Department of Revenue).

**OSE FORM 00201****STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS****9.2 CONTRACTOR LICENSING**

Contractors and Subcontractors listed in Section 7 of the Bid Form who are required by the South Carolina Code of Laws to be licensed, must be licensed at the time of bidding.

**9.3 SUBMITTING CONFIDENTIAL INFORMATION**

For every document Bidder submits in response to or with regard to this solicitation or request, Bidder must separately mark with the word "CONFIDENTIAL" every page, or portion thereof, that Bidder contends contains information that is exempt from public disclosure because it is either (a) a trade secret as defined in Section 30-4-40(a)(1), or (b) privileged & confidential, as that phrase is used in Section 11-35-410. For every document Bidder submits in response to or with regard to this solicitation or request, Bidder must separately mark with the words "TRADE SECRET" every page, or portion thereof, that Bidder contends contains a trade secret as that term is defined by Section 39-8-20 of the Trade Secrets Act. For every document Bidder submits in response to or with regard to this solicitation or request, Bidder must separately mark with the word "PROTECTED" every page, or portion thereof, that Bidder contends is protected by Section 11-35-1810. All markings must be conspicuous; use color, bold, underlining, or some other method in order to conspicuously distinguish the mark from the other text. Do not mark your entire bid as confidential, trade secret, or protected! If your bid, or any part thereof, is improperly marked as confidential or trade secret or protected, the State may, in its sole discretion, determine it nonresponsive. If only portions of a page are subject to some protection, do not mark the entire page. By submitting a response to this solicitation, Bidder (1) agrees to the public disclosure of every page of every document regarding this solicitation or request that was submitted at any time prior to entering into a contract (including, but not limited to, documents contained in a response, documents submitted to clarify a response, & documents submitted during negotiations), unless the page is conspicuously marked "TRADE SECRET" or "CONFIDENTIAL" or "PROTECTED", (2) agrees that any information not marked, as required by these bidding instructions, as a "Trade Secret" is not a trade secret as defined by the Trade Secrets Act, & (3) agrees that, notwithstanding any claims or markings otherwise, any prices, commissions, discounts, or other financial figures used to determine the award, as well as the final contract amount, are subject to public disclosure. In determining whether to release documents, the State will detrimentally rely on Bidders's marking of documents, as required by these bidding instructions, as being either "Confidential" or "Trade Secret" or "PROTECTED". By submitting a response, Bidder agrees to defend, indemnify & hold harmless the State of South Carolina, its officers & employees, from every claim, demand, loss, expense, cost, damage or injury, including attorney's fees, arising out of or resulting from the State withholding information that Bidder marked as "confidential" or "trade secret" or "PROTECTED".

**9.4 POSTING OF INTENT TO AWARD**

Notice of Intent to Award, SE-370, will be posted at the following location:

**Room or Area of Posting:** Lobby

**Building Where Posted:** Facilities Management Center

**Address of Building:** 743 Greene Street, Columbia, SC 29208

**WEB site address (if applicable):** purchasing.sc.edu Facilities/Construction Solicitations and Awards

**Posting date will be announced at bid opening.** In addition to posting the notice, the Owner will promptly send all responsive bidders a copy of the notice of intent to award and the final bid tabulation

**9.5 PROTEST OF SOLICITATION OR AWARD**

Any prospective bidder, offeror, contractor, or subcontractor who is aggrieved in connection with the solicitation of a contract shall protest within fifteen days of the date of issuance of the applicable solicitation document at issue. Any actual bidder, offeror, contractor, or subcontractor who is aggrieved in connection with the intended award or award of a contract shall protest within ten days of the date notification of intent to award is posted in accordance with Title 11, Chapter 35, Section 4210 of the South Carolina Code of Laws, as amended. A protest shall be in writing, shall set forth the grounds of the protest and the relief requested with enough particularity to give notice of the issues to be decided, and must be received by the State Engineer within the time provided.

Any protest must be addressed to the CPO, Office of State Engineer, and submitted in writing:

- A. by email to [protest-ose@mmo.sc.gov](mailto:protest-ose@mmo.sc.gov),
- B. by facsimile at 803-737-0639, or
- C. by post or delivery to 1201 Main Street, Suite 600, Columbia, SC 29201.

By submitting a protest to the foregoing email address, you (and any person acting on your behalf) consent to receive communications regarding your protest (and any related protests) at the e-mail address from which you sent your protest.

**OSE FORM 00201****STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

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**9.6 SOLICITATION INFORMATION FROM SOURCES OTHER THAN OFFICIAL SOURCE**

South Carolina Business Opportunities (SCBO) is the official state government publication for State of South Carolina solicitations. Any information on State agency solicitations obtained from any other source is unofficial and any reliance placed on such information is at the bidder's sole risk and is without recourse under the South Carolina Consolidated Procurement Code.

**9.7 BUILDER'S RISK INSURANCE**

Bidders are directed to Article 11.3 of the South Carolina Modified AIA Document A201, 2007 Edition, which, unless provided otherwise in the bid documents, requires the contractor to provide builder's risk insurance on the project.

**9.8 TAX CREDIT FOR SUBCONTRACTING WITH MINORITY FIRMS**

Pursuant to Section 12-6-3350, taxpayers, who utilize certified minority subcontractors, may take a tax credit equal to 4% of the payments they make to said subcontractors. The payments claimed must be based on work performed directly for a South Carolina state contract. The credit is limited to a maximum of fifty thousand dollars annually. The taxpayer is eligible to claim the credit for 10 consecutive taxable years beginning with the taxable year in which the first payment is made to the subcontractor that qualifies for the credit. After the above ten consecutive taxable years, the taxpayer is no longer eligible for the credit. The credit may be claimed on Form TC-2, "Minority Business Credit." A copy of the subcontractor's certificate from the Governor's Office of Small and Minority Business (OSMBA) is to be attached to the contractor's income tax return. Taxpayers must maintain evidence of work performed for a State contract by the minority subcontractor. Questions regarding the tax credit and how to file are to be referred to: SC Department of Revenue, Research and Review, Phone: (803) 898-5786, Fax: (803) 898-5888. The subcontractor must be certified as to the criteria of a "Minority Firm" by the Governor's Office of Small and Minority Business Assistance (OSMBA). Certificates are issued to subcontractors upon successful completion of the certification process. Questions regarding subcontractor certification are to be referred to: Governor's Office of Small and Minority Business Assistance, Phone: (803) 734-0657, Fax: (803) 734-2498. Reference: SC §11-35-5010 – Definition for Minority Subcontractor & SC §11-35-5230 (B) – Regulations for Negotiating with State Minority Firms.

**9.9 OTHER SPECIAL CONDITIONS OF THE WORK**

1. See Article 3.104 and 3.105 of 00811-OSE Standard Supplemental Conditions Modifying Article 11.4 of AIA Document A201, 1997 Edition, requiring the contractor to provide the builder's risk insurance on the project.

2. Contractor shall comply with the attached "Certification Regarding Illegal Immigration (Nov. 2008)."

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**END OF DOCUMENT**





## Section AIA A310-2010 Bid Bond

Bid Bond, AIA Document A310-2010 Edition, is incorporated into the Contract Documents by reference herein.

Copies of the Bid Bond, AIA Document A310-2010, may be obtained from the American Institute of Architects, 1735 New York Avenue, N.W., Washington, DC 20006, or local AIA offices and reprographic offices.

End of Section AIA A310-2010



**SE-330  
LUMP SUM BID FORM**

*Bidders shall submit bids on only Bid Form SE-330.*

**BID SUBMITTED BY:** \_\_\_\_\_  
*(Bidder's Name)*

**BID SUBMITTED TO:** \_\_\_\_\_  
*(Owner's Name)*

**FOR: PROJECT NAME:** WBS - Replace Roofing for East Ground Level Custodial and Facilities Supply Area

**PROJECT NUMBER:** CP00405532

**OFFER**

§ 1. In response to the Invitation for Construction Services and in compliance with the Instructions to Bidders for the above-named Project, the undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with the Owner on the terms included in the Bidding Documents, and to perform all Work as specified or indicated in the Bidding Documents, for the prices and within the time frames indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

§ 2. Pursuant to Section 11-35-3030(1) of the SC Code of Laws, as amended, Bidder has submitted Bid Security as follows in the amount and form required by the Bidding Documents:

Bid Bond with Power of Attorney       Electronic Bid Bond       Cashier's Check  
*(Bidder check one)*

§ 3. Bidder acknowledges the receipt of the following Addenda to the Bidding Documents and has incorporated the effects of said Addenda into this Bid:

*(Bidder, check all that apply. Note, there may be more boxes than actual addenda. Do not check boxes that do not apply)*

**ADDENDA:**       #1       #2       #3       #4       #5

§ 4. Bidder accepts all terms and conditions of the Invitation for Bids, including, without limitation, those dealing with the disposition of Bid Security. Bidder agrees that this Bid, including all Bid Alternates, if any, may not be revoked or withdrawn after the opening of bids, and shall remain open for acceptance for a period of **60** Days following the Bid Date, or for such longer period of time that Bidder may agree to in writing upon request of the Owner.

§ 5. Bidder herewith offers to provide all labor, materials, equipment, tools of trades and labor, accessories, appliances, warranties and guarantees, and to pay all royalties, fees, permits, licenses and applicable taxes necessary to complete the following items of construction work:

§ 6.1 **BASE BID WORK** *(as indicated in the Bidding Documents and generally described as follows):* Replace the roof and other related improvements in the Custodial Supply room at Williams-Brice Stadium. Scope of work includes required abatement.

\$ \_\_\_\_\_, which sum is hereafter called the Base Bid.

*(Bidder - insert Base Bid Amount on line above)*

**SE-330**  
**LUMP SUM BID FORM**

§ 6.2 **BID ALTERNATES** as indicated in the Bidding Documents and generally described as follows:

**ALTERNATE # 1** (Brief Description): Abatement and painting of the upper east exterior wall and painting of the upper south exterior wall.

**ADD TO** or  **DEDUCT FROM BASE BID:** \$ \_\_\_\_\_

(Bidder to Mark appropriate box to clearly indicate the price adjustment offered for each alternate)

**ALTERNATE # 2** (Brief Description): \_\_\_\_\_

**ADD TO** or  **DEDUCT FROM BASE BID:** \$ \_\_\_\_\_

(Bidder to Mark appropriate box to clearly indicate the price adjustment offered for each alternate)

**ALTERNATE # 3** (Brief Description): \_\_\_\_\_

**ADD TO** or  **DEDUCT FROM BASE BID:** \$ \_\_\_\_\_

(Bidder to Mark appropriate box to clearly indicate the price adjustment offered for each alternate)

§ 6.3 **UNIT PRICES:**

**BIDDER** offers for the Agency’s consideration and use, the following **UNIT PRICES**. The **UNIT PRICES** offered by **BIDDER** indicate the amount to be added to or deducted from the **CONTRACT SUM** for each item-unit combination. **UNIT PRICES** include all costs to the Agency, including those for materials, labor, equipment, tools of trades and labor, fees, taxes, insurance, bonding, overhead, profit, etc. The Agency reserves the right to include or not to include any of the following **UNIT PRICES** in the Contract and to negotiate the **UNIT PRICES** with **BIDDER**.

<u>No.</u>	<u>ITEM</u>	<u>Unit of Measure</u>	<u>ADD</u>	<u>DEDUCT</u>
<u>1.</u>	_____	_____	\$ _____	\$ _____
<u>2.</u>	_____	_____	\$ _____	\$ _____
<u>3.</u>	_____	_____	\$ _____	\$ _____
<u>4.</u>	_____	_____	\$ _____	\$ _____
<u>5.</u>	_____	_____	\$ _____	\$ _____
<u>6.</u>	_____	_____	\$ _____	\$ _____

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**LUMP SUM BID FORM**

**§ 7. LISTING OF PROPOSED SUBCONTRACTORS PURSUANT TO SECTION 3020(b)(i), CHAPTER 35, TITLE 11 OF THE SOUTH CAROLINA CODE OF LAWS, AS AMENDED**  
*(See Instructions on the following page BF-2A)*

Bidder shall use the below-listed Subcontractors in the performance of the Subcontractor Classification work listed:

<b>SUBCONTRACTOR CLASSIFICATION</b> <b>By License Classification and/or Subclassification</b> <i>(Completed by Owner)</i>	<b>SUBCONTRACTOR'S PRIME CONTRACTOR'S NAME</b> <i>(Must be completed by Bidder)</i>	<b>SUBCONTRACTOR'S PRIME CONTRACTOR'S SC LICENSE NUMBER</b> <i>(Requested, but not Required)</i>
<b>BASE BID</b>		
<b>ALTERNATE #1</b>		
<b>ALTERNATE #2</b>		
<b>ALTERNATE #3</b>		

If a Bid Alternate is accepted, Subcontractors listed for the Bid Alternate shall be used for the work of both the Alternate and the Base Bid work.

# SE-330 LUMP SUM BID FORM

## INSTRUCTIONS FOR SUBCONTRACTOR LISTING

1. Section 7 of the Bid Form sets forth an Owner developed list of contractor/subcontractor specialties by contractor license category and/or subcategory for which bidder is required to identify the entity (subcontractor(s) and/or himself) Bidder will use to perform the work of each listed specialty..
  - a. **Column A:** The Owner fills out this column, which identifies the contractor/subcontractor specialties for which the bidder must list either a subcontractor or himself as the entity that will perform this work. Subcontractor specialties are identified by contractor license categories or subcategories listed in Title 40 of the South Carolina Code of laws. If the owner has not identified a specialty, the bidder does not list a subcontractor.
  - b. **Columns B and C:** In these columns, the Bidder identifies the subcontractors it will use for the work of each specialty listed by the Owner in Column A. Bidder must identify only the subcontractor(s) who will perform the work and no others. Bidders should make sure that their identification of each subcontractor is clear and unambiguous. A listing that could be any number of different entities may be cause for rejection of the bid as non-responsive. For example, a listing of M&M without more may be problematic if there are multiple different licensed contractors in South Carolina whose names start with M&M.
2. **Subcontractor Defined:** For purposes of subcontractor listing, a subcontractor is an entity who will perform work or render service to the prime contractor to or about the construction site pursuant to a contract with the prime contractor. Bidder should not identify sub-subcontractors in the spaces provided on the bid form but only those entities with which bidder will contract directly. Likewise, do not identify material suppliers, manufacturers, and fabricators that will not perform physical work at the site of the project but will only supply materials or equipment to the bidder or proposed subcontractor(s).
3. **Subcontractor Qualifications:** Bidder must only list subcontractors who possess a South Carolina Contractor's license with the license classification and/or subclassification identified by the Owner in the first column on the left. The subcontractor license must also be within the appropriate license group for the work of the specialty. If Bidder lists a subcontractor who is not qualified to perform the work, the Bidder will be rejected as non-responsive.
4. **Use of Own forces:** If under the terms of the Bidding Documents, Bidder is qualified to perform the work of a listed specialty and Bidder does not intend to subcontract such work but to use Bidder's own employees to perform such work, the Bidder must insert its own name in the space provided for that specialty.
5. **Use of Multiple Subcontractors:**
  - a. If Bidder intends to use multiple subcontractors to perform the work of a single specialty listing, Bidder must insert the name of each subcontractor Bidder will use, preferably separating the name of each by the word **"and"**. If Bidder intends to use both his own employees to perform a part of the work of a single specialty listing and to use one or more subcontractors to perform the remaining work for that specialty listing, bidder must insert his own name and the name of each subcontractor, preferably separating the name of each with the word **"and"**. Bidder must use each entity listed for the work of a single specialty listing in the performance of that work.
  - b. **Optional Listing Prohibited:** Bidder may not list multiple subcontractors for a specialty listing, in a form that provides the Bidder the option, after bid opening or award, to choose to use one or more but not all the listed subcontractors to perform the work for which they are listed. A listing, which on its face requires subsequent explanation to determine whether it is an optional listing, is non-responsive. If bidder intends to use multiple entities to perform the work for a single specialty listing, bidder must clearly set forth on the bid form such intent. Bidder may accomplish this by simply inserting the word **"and"** between the names of each entity listed for that specialty. Agency will reject as non-responsive a listing that contains the names of multiple subcontractors separated by a blank space, the word "or", a virgule (that is a /), or any separator that the Agency may reasonably interpret as an optional listing.
6. If Bidder is awarded the contract, bidder must, except with the approval of the Agency for good cause shown, use the listed entities to perform the work for which they are listed.
7. If bidder is awarded the contract, bidder will not be allowed to substitute another entity as subcontractor in place of a subcontractor listed in Section 7 of the Bid except for one or more of the reasons allowed by the SC Code of Laws.
8. Bidder's failure to identify an entity (subcontractor or himself) to perform the work of a subcontractor specialty listed in the first column on the left will render the Bid non-responsive.

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### § 8. LIST OF MANUFACTURERS, MATERIAL SUPPLIERS, AND SUBCONTRACTORS OTHER THAN SUBCONTRACTORS LISTED IN SECTION 7 ABOVE (*FOR INFORMATION ONLY*):

Pursuant to instructions in the Invitation for Construction Services, if any, Bidder will provide to Owner upon the Owner's request and within 24 hours of such request, a listing of manufacturers, material suppliers, and subcontractors, other than those listed in Section 7 above, that Bidder intends to use on the project. Bidder acknowledges and agrees that this list is provided for purposes of determining responsibility and not pursuant to the subcontractor listing requirements of SC Code Ann § 11-35-3020(b)(i).

### § 9. TIME OF CONTRACT PERFORMANCE AND LIQUIDATED DAMAGES

#### a) CONTRACT TIME

Bidder agrees that the Date of Commencement of the Work shall be established in a Notice to Proceed to be issued by the Owner. Bidder agrees to substantially complete the Work within sixty (60) Calendar Days from the Date of Commencement, subject to adjustments as provided in the Contract Documents.

#### b) LIQUIDATED DAMAGES

Bidder further agrees that from the compensation to be paid, the Owner shall retain as Liquidated Damages the amount of \$ 250.00 for each Calendar Day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted time for Substantial Completion as provided in the Contract Documents. This amount is intended by the parties as the predetermined measure of compensation for actual damages, not as a penalty for nonperformance.

### § 10. AGREEMENTS

- a) Bidder agrees that this bid is subject to the requirements of the laws of the State of South Carolina.
- b) Bidder agrees that at any time prior to the issuance of the Notice to Proceed for this Project, this Project may be canceled for the convenience of, and without cost to, the State.
- c) Bidder agrees that neither the State of South Carolina nor any of its agencies, employees or agents shall be responsible for any bid preparation costs, or any costs or charges of any type, should all bids be rejected or the Project canceled for any reason prior to the issuance of the Notice to Proceed.

### § 11. ELECTRONIC BID BOND

By signing below, the Principal is affirming that the identified electronic bid bond has been executed and that the Principal and Surety are firmly bound unto the State of South Carolina under the terms and conditions of the AIA Document A310, Bid Bond, included in the Bidding Documents.

**ELECTRONIC BID BOND NUMBER:** \_\_\_\_\_

**SIGNATURE AND TITLE:** \_\_\_\_\_



**SE-330  
LUMP SUM BID FORM**

**CONTRACTOR'S CLASSIFICATIONS AND SUBCLASSIFICATIONS WITH LIMITATION**

**SC Contractor's License Number(s):** \_\_\_\_\_

**Classification(s) & Limits:** \_\_\_\_\_

**Subclassification(s) & Limits:** \_\_\_\_\_

**By signing this Bid, the person signing reaffirms all representation and certification made by both the person signing and the Bidder, including without limitation, those appearing in Article 2 of the Instructions to Bidders, is expressly incorporated by reference.**

**BIDDER'S LEGAL NAME:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_  
\_\_\_\_\_

**TELEPHONE:** \_\_\_\_\_

**EMAIL:** \_\_\_\_\_

**SIGNATURE:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**PRINT NAME:** \_\_\_\_\_

**TITLE:** \_\_\_\_\_

**Section AIA A101-2007**  
**Standard Form of Agreement Between**  
**Owner and Contractor**

Standard Form of Agreement Between Owner and Contractor, AIA Document A101-2007, is incorporated into the Contract Documents by reference herein.

Copies of the Standard Form of Agreement Between Owner and Contractor, AIA Document A101-2007, may be obtained from the American Institute of Architects, 1735 New York Avenue, N.W., Washington, DC 20006, or local AIA offices and reprographic offices.

End of Section AIA A101-2007



# OSE FORM 00501

## STANDARD MODIFICATIONS TO AGREEMENT BETWEEN OWNER AND CONTRACTOR

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**AGENCY:** University of South Carolina

**PROJECT NAME:** WBS-Replace Roofingfor East Ground Level Custodial and Facilities Supply Area

**PROJECT NUMBER:** CP00405532

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### 1. STANDARD MODIFICATIONS TO AIA A101-2007

- 1.1** These Standard Modifications amend or supplement the *Standard Form of Agreement Between Owner and Contractor* (AIA Document A101-2007) and other provisions of Bidding and Contract Documents as indicated below.
- 1.2** All provisions of A101-2007, which are not so amended or supplemented, remain in full force and effect.

### 2. MODIFICATIONS TO A101

- 2.1** *Insert the following at the end of Article 1:*  
Any reference in this document to the Agreement between the Owner and Contractor, AIA Document A101, or some abbreviated reference thereof, shall mean the AIA A101, 2007 Edition as modified by OSE Form 00501 – Standard Modification to Agreement Between Owner and Contractor. Any reference in this document to the General Conditions of the Contract for Construction, AIA Document A201, or some abbreviated reference thereof, shall mean the AIA A201, 2007 Edition as modified by OSE Form 00811 – Standard Supplementary Conditions.
- 2.2** *Delete Section 3.1 and substitute the following:*  
**3.1** The Date of Commencement of the Work shall be the date fixed in a Notice to Proceed issued by the Owner. The Owner shall issue the Notice to Proceed to the Contractor in writing, no less than seven days prior to the Date of Commencement. Unless otherwise provided elsewhere in the contract documents, and provided the contractor has secured all required insurance and surety bonds, the contractor may commence work immediately after receipt of the Notice to Proceed.
- 2.3** *Delete Section 3.2 and substitute the following:*  
**3.2** The Contract Time as provided in Section 9(a) of the Bid Form (SE-330) for this Project shall be measured from the Date of Commencement. Contractor agrees that if the Contractor fails to achieve Substantial Completion of the Work within the Contract Time, the Owner shall be entitled to withhold or recover from the Contractor Liquidated Damages in the amounts set forth in Section 9(b) of the Bid Form (SE-330), subject to adjustments of this Contract Time as provided in the Contract Documents.
- 2.4** *In Section 5.1.1, insert the words “and Owner” after the phrase “Payment submitted to the Architect.”*
- 2.5** *Delete Section 5.1.3 and substitute the following:*  
**5.1.3** The Owner shall make payment of the certified amount to the Contractor not later than 21 days after receipt of the Application for Payment.
- 2.6** *In Section 5.1.6, insert the following after the phrase “Subject to other provisions of the Contract Documents”:*  
and subject to Title 12, Chapter 8, Section 550 of the South Carolina Code of Laws, as amended (Withholding Requirements for Payments to Non-Residents).  
*In the spaces provided in Sub-Sections 1 and 2 for inserting the retainage amount, insert “three and one-half percent (3.5%).”*
- 2.7** *In Section 5.1.8, delete the word “follows” and the colon and substitute the following:*  
set forth in S.C. Code Ann. § 11-35-3030(4).
- 2.8** *In Section 5.1.9, delete the words “Except with the Owner’s prior approval, the” before the word “ Contractor.”*
- 2.9** *In Section 5.2.2, delete the number 30 and substitute the number 21, delete everything following the words “Certificate for Payment” and place a period at the end of the resulting sentence.*
- 2.10** *Delete the language of Sections 6.1 and 6.2 and substitute the word “Reserved” for the deleted language of each Section.*
- 2.11** *Delete the language of Section 8.2 and substitute the word “Reserved.”*

**OSE FORM 00501**  
**STANDARD MODIFICATIONS TO AGREEMENT BETWEEN OWNER AND**  
**CONTRACTOR**

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**OSE FORM 00501****STANDARD MODIFICATIONS TO AGREEMENT BETWEEN OWNER AND CONTRACTOR**

**2.12** *In Section 8.3, make the word "Representative" in the title plural, delete everything following the title, and substitute the following:*

**8.3.1** Owner designates the individual listed below as its Senior Representative ("Owner's Senior Representative"), which individual has the responsibility for and, subject to Section 7.2.1 of the General Conditions, the authority to resolve disputes under Section 15.6 of the General Conditions:

**Name:** Mr. Tom Opal

**Title:** Senior Project Manager

**Address:** 743 Greene Street, Columbia, SC 29208

**Telephone:** (803) 777-7076

**FAX:** (803) 777-8739

**Email:** tnopal@fmc.sc.edu

**8.3.2** Owner designates the individual listed below as its Owner's Representative, which individual has the authority and responsibility set forth in Section 2.1.1 of the General Conditions:

**Name:** Ms. Ann Derrick

**Title:** Project Manager

**Address:** 743 Greene Street, Columbia, SC 29208

**Telephone:** (803) 777-5811

**FAX:** (803) 777-7334

**Email:** aderrick@fmc.sc.edu

**2.13** *In Section 8.4, make the word "Representative" in the title plural, delete everything following the title, and substitute the following:*

**8.4.1** Contractor designates the individual listed below as its Senior Representative ("Contractor's Senior Representative"), which individual has the responsibility for and authority to resolve disputes under Section 15.6 of the General Conditions:

**Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Telephone:** \_\_\_\_\_

**FAX:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**8.4.2** Contractor designates the individual listed below as its Contractor's Representative, which individual has the authority and responsibility set forth in Section 3.1.1 of the General Conditions:

**Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Telephone:** \_\_\_\_\_

**FAX:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**2.14** *Add the following Section 8.6.1:*

**8.6.1** The Architect's representative:

**Name:** M. Keith Myhand, AIA

**Title:** Architect

**Address:** 412 Meeting Street, West Columbia, SC 29169

**Telephone:** (803) 791-1020

**FAX:** (803) 791-1022

**Email:** kmyhand@jcsarchitects.com

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**STANDARD MODIFICATIONS TO AGREEMENT BETWEEN OWNER AND**  
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**2.15** *In Section 9.1.7, Sub-Section 2, list the following documents in the space provided for listing documents:*

**Invitation for Construction Services (SE-310)**

**Instructions to Bidders (AIA Document A701-1997)**

**Standard Supplemental Instructions to Bidders (OSE Form 00201)**

**Contractor's Bid (Completed SE-330)**

**Notice of Intent to Award (Completed SE-370)**

**2.16** *In Article 10, delete everything after the first sentence.*

**END OF DOCUMENT**

**Section AIA A201-2007**  
**General Conditions of the Contract**  
**for Construction**

General Conditions of the Contract for Construction, AIA Document A201-2007, is incorporated into the Contract Documents by reference herein.

Copies of the General Conditions of the Contract for Construction, AIA Document A101-2007, may be obtained from the American Institute of Architects, 1735 New York Avenue, N.W., Washington, DC 20006, or local AIA offices and reprographic offices.

End of Section AIA A201-2007





# OSE FORM 00811

## STANDARD SUPPLEMENTARY CONDITIONS

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**AGENCY:** University of South Carolina

**PROJECT NAME:** WBS - Replace Roofing for East Ground Level Custodial and Facilities Supply Area

**PROJECT NUMBER:** CP00405532

### 1. GENERAL CONDITIONS

The *General Conditions of the Contract for Construction*, AIA Document A201, 2007 Edition, Articles 1 through 15 inclusive, is a part of this Contract and is incorporated as fully as if herein set forth. For brevity, AIA Document A201 is also referred to in the Contract Documents collectively as the "General Conditions."

### 2. STANDARD SUPPLEMENTARY CONDITIONS

**2.1** The following supplements modify, delete and/or add to the General Conditions. Where any portion of the General Conditions is modified or any paragraph, Section or clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of the General Conditions shall remain in effect.

**2.2** Unless otherwise stated, the terms used in these Standard Supplementary Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions.

### 3. MODIFICATIONS TO A201-2007

**3.1** *Insert the following at the end of Section 1.1.1:*

Any reference in this document to the Agreement between the Owner and Contractor, AIA Document A101, or some abbreviated reference thereof, shall mean the AIA A101, 2007 Edition as modified by OSE Form 00501 – Standard Modification to Agreement between Owner and Contractor. Any reference in this document to the General Conditions of the Contract for Construction, AIA Document A201, or some abbreviated reference thereof, shall mean the AIA A201, 2007 Edition as modified by OSE Form 00811 – Standard Supplementary Conditions.

**3.2** *Delete the language of Section 1.1.8 and substitute the word "Reserved."*

**3.3** *Add the following Section 1.1.9:*

#### 1.1.9 NOTICE TO PROCEED

Notice to Proceed is a document issued by the Owner to the Contractor, with a copy to the Architect, directing the Contractor to begin prosecution of the Work in accordance with the requirements of the Contract Documents. The Notice to Proceed shall fix the date on which the Contract Time will commence.

**3.4** *Insert the following at the end of Section 1.2.1:*

In the event of patent ambiguities within or between parts of the Contract Documents, the contractor shall 1) provide the better quality or greater quantity of Work, or 2) comply with the more stringent requirement, either or both in accordance with the Architect's interpretation.

**3.5** *Delete Section 1.5.1 and substitute the following:*

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

**3.6** *Delete Section 2.1.1 and substitute the following:*

**2.1.1** The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization, except as provided in Section 7.1.2. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's Representative. [Reference § 8.2 of the Agreement.]

**3.7** *Delete Section 2.1.2 and substitute the following:*

**2.1.2** The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to post Notice of Project Commencement pursuant to Title 29, Chapter 5, Section 23 of the South Carolina Code of Laws, as amended.

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## OSE FORM 00811

### STANDARD SUPPLEMENTARY CONDITIONS

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**3.8** *Delete Section 2.2.3 and substitute the following:*

**2.2.3** The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. Subject to the Contractor's obligations, including those in Section 3.2, the Contractor shall be entitled to rely on the accuracy of information furnished by the Owner pursuant to this Section but shall exercise proper precautions relating to the safe performance of the Work.

**3.9** *Replace the period at the end of the last sentence of Section 2.2.4 with a semicolon and insert the following after the inserted semicolon:*

"however, the Owner does not warrant the accuracy of any such information requested by the Contractor that is not otherwise required of the Owner by the Contract Documents. Neither the Owner nor the Architect shall be required to conduct investigations or to furnish the Contractor with any information concerning subsurface characteristics or other conditions of the area where the Work is to be performed beyond that which is provide in the Contract Documents."

**3.10** *Delete Section 2.2.5 and substitute the following:*

**2.2.5** Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor with ten copies of the Contract Documents. The Contractor may make reproductions of the Contract Documents pursuant to Section 1.5.2. All copies of the drawings and specifications, except the Contractor's record set, shall be returned or suitably accounted for to the Owner, on request, upon completion of the Work.

**3.11** *Add the following Sections 2.2.6 and 2.2.7:*

**2.2.6** The Owner assumes no responsibility for any conclusions or interpretation made by the Contractor based on information made available by the Owner.

**2.2.7** The Owner shall obtain, at its own cost, general building and specialty inspection services as required by the Contract Documents. The Contractor shall be responsible for payment of any charges imposed for reinspections.

**3.12** *Delete Section 2.4 and substitute the following:*

**2.4** If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect, including but not limited to providing necessary resources, with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Directive shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

**3.13** *Insert the following at the end of Section 3.2.1:*

The Contractor acknowledges that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, electric power, and roads; (3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Owner, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the Owner.

**3.14** *In the third sentence of Section 3.2.4, insert the word "latent" before the word "errors."*

**3.15** *In the last sentence of Section 3.3.1, insert the words "by the Owner in writing" after the word "instructed."*

**3.16** *Delete the third sentence of Section 3.5 and substitute the following sentences:*

Work, materials, or equipment not conforming to these requirements shall be considered defective. Unless caused by the Contractor or a subcontractor at any tier, the Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage.

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### STANDARD SUPPLEMENTARY CONDITIONS

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**3.17** *Insert the following at the end of Section 3.6:*

The Contractor shall comply with the requirements of Title 12, Chapter 9 of the South Carolina Code of Laws, as amended, regarding withholding tax for nonresidents, employees, contractors and subcontractors.

**3.18** *In Section 3.7.1, delete the words “the building permit as well as for other” and insert the following sentence at the end of this section:*

Pursuant to Title 10, Chapter 1, Section 180 of the South Carolina Code of Laws, as amended, no local general or specialty building permits are required for state buildings.

**3.19** *Delete the last sentence of Section 3.7.5 and substitute the following:*

Adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 7.3.3.

**3.20** *Delete the last sentence of Section 3.8.2.3 and substitute the following:*

The amount of the Change Order shall reflect the difference between actual costs, as documented by invoices, and the allowances under Section 3.8.2.1.

**3.21** *In Section 3.9.1, insert a comma after the word “superintendent” in the first sentence and insert the following after the inserted comma:*

acceptable to the Owner,

**3.22** *Delete Section 3.9.2 and substitute the following:*

**3.9.2** The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner the name and qualifications of a proposed superintendent. The Owner may reply within 14 days to the Contractor in writing stating (1) whether the Owner has reasonable objection to the proposed superintendent or (2) that the Owner requires additional time to review. Failure of the Owner to reply within the 14-day period shall constitute notice of no reasonable objection.

**3.23** *After the first sentence in Section 3.9.3, insert the following sentence:*

The Contractor shall notify the Owner, in writing, of any proposed change in the superintendent, including the reason therefore, prior to making such change.

**3.24** *Delete Section 3.10.3 and substitute the following:*

**3.10.3** Additional requirements, if any, for the construction schedule are as follows:

*(Check box if applicable to this Contract)*

The construction schedule shall be in a detailed precedence-style critical path management (CPM) or primavera-type format satisfactory to the Owner and the Architect that shall also (1) provide a graphic representation of all activities and events that will occur during performance of the work; (2) identify each phase of construction and occupancy; and (3) set forth dates that are critical in ensuring the timely and orderly completion of the Work in accordance with the requirements of the Contract Documents (hereinafter referred to as “Milestone Dates”). Upon review and acceptance by the Owner and the Architect of the Milestone Dates, the construction schedule shall be deemed part of the Contract Documents and attached to the Agreement as Exhibit “A.” If not accepted, the construction schedule shall be promptly revised by the Contractor in accordance with the recommendations of the Owner and the Architect and resubmitted for acceptance. The Contractor shall monitor the progress of the Work for conformance with the requirements of the construction schedule and shall promptly advise the Owner of any delays or potential delays. Whenever the approved construction schedule no longer reflects actual conditions and progress of the work or the Contract Time is modified in accordance with the terms of the Contract Documents, the Contractor shall update the accepted construction schedule to reflect such conditions. In the event any progress report indicates any delays, the Contractor shall propose an affirmative plan to correct the delay, including overtime and/or additional labor, if necessary. In no event shall any progress report constitute an adjustment in the Contract Time, any Milestone Date, or the Contract Sum unless any such adjustment is agreed to by the Owner and authorized pursuant to Change Order.

**3.25** *Add the following Section 3.10.4:*

**3.10.4** Owner’s review and acceptance of Contractor’s schedule is not conducted for the purpose of either determining its accuracy and completeness or approving the construction means, methods, techniques, sequences or procedures. The Owner’s approval shall not relieve the Contractor of any obligations. Unless expressly addressed in a Modification, the Owner’s approval of a schedule shall not change the Contract Time.

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### STANDARD SUPPLEMENTARY CONDITIONS

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**3.26** *Add the following Section 3.12.5.1:*

**3.12.5.1** The fire sprinkler shop drawings shall be prepared by a licensed fire sprinkler contractor and shall accurately reflect actual conditions affecting the required layout of the fire sprinkler system. The fire sprinkler contractor shall certify the accuracy of his shop drawings prior to submitting them for review and approval. The fire sprinkler shop drawings shall be reviewed and approved by the Architect's engineer of record who, upon approving the sprinkler shop drawings will submit them to the State Fire Marshal or other authorities having jurisdiction for review and approval. The Architect's engineer of record will submit a copy of the State Fire Marshal's approval letter to the Contractor, Architect, and OSE. Unless authorized in writing by OSE, neither the Contractor nor subcontractor at any tier shall submit the fire sprinkler shop drawings directly to the State Fire Marshal or other authorities having jurisdiction for approval.

**3.27** *In the fourth sentence of Section 3.12.10, after the comma following the words "licensed design professional," insert the following:*

who shall comply with reasonable requirements of the Owner regarding qualifications and insurance and

**3.28** *In Section 3.13, insert the section number "3.13.1" before the opening words "The Contractors shall."*

**3.29** *Add the following Sections 3.13.2 and 3.13.3:*

**3.13.2** Protection of construction materials and equipment stored at the Project site from weather, theft, vandalism, damage, and all other adversity is solely the responsibility of the Contractor. The Contractor shall perform the work in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the Work and all adjacent areas. The Work shall be performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to the site of the Work shall be free from all debris, building materials, and equipment likely to cause hazardous conditions.

**3.13.3** The Contractor and any entity for which the Contractor is responsible shall not erect any sign on the Project site without the prior written consent of the Owner.

**3.30** *In the first sentence of Section 3.18.1, after the parenthetical "... (other than the Work itself), ..." and before the word "...but...", insert the following:*

including loss of use resulting therefrom,

**3.31** *Delete Section 4.1.1 and substitute the following:*

**4.1.1** The Architect is that person or entity identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

**3.32** *Insert the following at the end of Section 4.2.1:*

Any reference in the Contract Documents to the Architect taking action or rendering a decision with a "reasonable time" is understood to mean no more than fourteen days, unless otherwise specified in the Contract Documents or otherwise agreed to by the parties.

**3.33** *Delete the first sentence of Section 4.2.2 and substitute the following:*

The Architect will visit the site as necessary to fulfill its obligation to the Owner for inspection services, if any, and, at a minimum, to assure conformance with the Architect's design as shown in the Contract Documents and to observe the progress and quality of the various components of the Contractor's Work, and to determine if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents.

**3.34** *Delete the first sentence of Section 4.2.3 and substitute the following:*

On the basis of the site visits, the Architect will keep the Owner informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work.

**3.35** *In Section 4.2.5, after the words "evaluations of the" and before the word "Contractor's," insert the following:*

Work completed and correlated with the

**3.36** *Delete the first sentence of Section 4.2.11 and substitute the following:*

**4.2.11** The Architect will, in the first instance, interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. Upon receipt of such request, the Architect will promptly provide the non-requesting party with a copy of the request.

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### STANDARD SUPPLEMENTARY CONDITIONS

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**3.37** *Insert the following at the end of Section 4.2.12:*

If either party disputes the Architects interpretation or decision, that party may proceed as provided in Article 15. The Architect's interpretations and decisions may be, but need not be, accorded any deference in any review conducted pursuant to law or the Contract Documents.

**3.38** *Delete Section 4.2.14 and substitute the following:*

The Architect will review and respond to requests for information about the Contract Documents so as to avoid delay to the construction of the Project. The Architect's response to such requests will be made in writing with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information. Any response to a request for information must be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. Unless issued pursuant to a Modification, supplemental Drawings or Specifications will not involve an adjustment to the Contract Sum or Contract Time.

**3.39** *Delete Section 5.2.1 and substitute the following:*

**5.2.1** Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, within fourteen days after posting of the Notice of Intent to Award the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (excluding Listed Subcontractors but including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Owner may reply within 14 days to the Contractor in writing stating (1) whether the Owner has reasonable objection to any such proposed person or entity. Failure of the Owner to reply within the 14 day period shall constitute notice of no reasonable objection.

**3.40** *Delete Section 5.2.2 and substitute the following:*

**5.2.2** The Contractor shall not contract with a proposed person or entity to whom the Owner has made reasonable and timely objection. The Owner shall not direct the Contractor to contract with any specific individual or entity for supplies or services unless such supplies and services are necessary for completion of the Work and the specified individual or entity is the only source of such supply or services.

**3.41** *In the first sentence of Section 5.2.3, delete the words "...or Architect..." in the two places they appear.*

**3.42** *Delete the words "...or Architect..." in the in the first sentence of Section 5.2.4 and insert the following sentence at the end of Section 5.2.4:*

The Contractor's request for substitution must be made to the Owner in writing accompanied by supporting information.

**3.43** *Add the following Section 5.2.5:*

**5.2.5** A Subcontractor identified in the Contractor's Bid in response the specialty subcontractor listing requirements of Section 7 of the Bid Form (SE-330) may only be substituted in accordance with and as permitted by the provisions of Title 11, Chapter 35, Section 3021 of the South Carolina Code of Laws, as amended. A proposed substitute for a Listed Subcontractor shall be subject to the Owner's approval as set forth in Section 5.2.3.

**3.44** *Add the following Section 5.2.6:*

**5.2.6** The Iran Divestment Act List is a list published by the Board pursuant to Section 11-57-310 that identifies persons engaged in investment activities in Iran. Currently, the list is available at the following URL: <http://procurement.sc.gov/PS/PS-iran-divestment.phtm>(.) Consistent with Section 11-57-330(B), the Contractor shall not contract with any person to perform a part of the Work, if, at the time you enter into the subcontract, that person is on the then-current version of the Iran Divestment Act List.

**3.45** *In Section 5.3, delete everything following the heading "SUBCONTRACTUAL RELATIONS" and insert the following Sections 5.3.1, 5.3.2, 5.3.3, and 5.3.4:*

**5.3.1** By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise herein or in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract

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Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

**5.3.2** Without limitation on the generality of Section 5.3.1, each Subcontract agreement and each Sub-subcontract agreement shall include, and shall be deemed to include, the following Sections of these General Conditions: 3.2, 3.5, 3.18, 5.3, 5.4, 6.2.2, 7.3.3, 7.5, 7.6, 13.1, 13.12, 14.3, 14.4, and 15.1.6.

**5.3.3** Each Subcontract Agreement and each Sub-subcontract agreement shall exclude, and shall be deemed to exclude, Sections 13.2.1 and 13.6 and all of Article 15, except Section 15.1.6, of these General Conditions. In the place of these excluded sections of the General Conditions, each Subcontract Agreement and each Sub-subcontract may include Sections 13.2.1 and 13.6 and all of Article 15, except Section 15.1.6, of AIA Document A201-2007, Conditions of the Contract, as originally issued by the American Institute of Architects.

**5.3.4** The Contractor shall assure the Owner that all agreements between the Contractor and its Subcontractor incorporate the provisions of Subparagraph 5.3.1 as necessary to preserve and protect the rights of the Owner and the Architect under the Contract Documents with respect to the work to be performed by Subcontractors so that the subcontracting thereof will not prejudice such rights. The Contractor's assurance shall be in the form of an affidavit or in such other form as the Owner may approve. Upon request, the Contractor shall provide the Owner or Architect with copies of any or all subcontracts or purchase orders.

**3.46** *Delete the last sentence of Section 5.4.1.*

**3.47** *Add the following Sections 5.4.4, 5.4.5 and 5.4.6:*

**5.4.4** Each subcontract shall specifically provide that the Owner shall only be responsible to the subcontractor for those obligations of the Contractor that accrue subsequent to the Owner's exercise of any rights under this conditional assignment.

**5.4.5** Each subcontract shall specifically provide that the Subcontractor agrees to perform portions of the Work assigned to the Owner in accordance with the Contract Documents.

**5.4.6** Nothing in this Section 5.4 shall act to reduce or discharge the Contractor's payment bond surety's obligations to claimants for claims arising prior to the Owner's exercise of any rights under this conditional assignment.

**3.48** *Delete the language of Section 6.1.4 and substitute the word "Reserved."*

**3.49** *Insert the following at the end of Section 7.1.2:*

If the amount of a Modification exceeds the limits of the Owner's Construction Change Order Certification (reference Section 9.1.7.2 of the Agreement), then the Owner's agreement is not effective, and Work may not proceed, until approved in writing by the Office of State Engineer.

**3.50** *Delete Section 7.2.1 and substitute the following:*

**7.2.1** A Change Order is a written instrument prepared by the Architect (using State Form SE-380 "Construction Change Order") and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

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

**3.51** *Add the following Sections 7.2.2, 7.2.3, 7.2.4, and 7.2.5:*

**7.2.2** If a Change Order provides for an adjustment to the Contract Sum, the adjustment must be calculated in accordance with Section 7.3.3.

**7.2.3** At the Owner's request, the Contractor shall prepare a proposal to perform the work of a proposed Change Order setting forth the amount of the proposed adjustment, if any, in the Contract Sum; and the extent of the proposed adjustment, if any, in the Contract Time. Any proposed adjustment in the Contract sum shall be prepared in accordance with Section 7.2.2. The Owner's request shall include any revisions to the Drawings or Specifications necessary to define any changes in the Work. Within fifteen days of receiving the request, the Contractor shall submit the proposal to the Owner and Architect along with all documentation required by Section 7.6.



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**7.2.4** If the Contractor requests a Change Order, the request shall set forth the proposed change in the Work and shall be prepared in accordance with Section 7.2.3. If the Contractor requests a change to the Work that involves a revision to either the Drawings or Specifications, the Contractor shall reimburse the Owner for any expenditure associated with the Architects' review of the proposed revisions, except to the extent the revisions are accepted by execution of a Change Order.

**7.2.5** Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work that is the subject of the Change Order, including, but not limited to, any adjustments to the Contract Sum or the Contract Time.

**3.52** *Delete 7.3.3 and substitute the following:*

#### **7.3.3 PRICE ADJUSTMENTS**

**7.3.3.1** If any Modification, including a Construction Change Directive, provides for an adjustment to the Contract Sum, the adjustment shall be based on whichever of the following methods is the most valid approximation of the actual cost to the contractor, with overhead and profit as allowed by Section 7.5:

- .1** Mutual acceptance of a lump sum;
- .2** Unit prices stated in the Contract Documents, except as provided in Section 7.3.4, or subsequently agreed upon;
- .3** Cost attributable to the events or situations under applicable clauses with adjustment of profits or fee, all as specified in the contract, or subsequently agreed upon by the parties, or by some other method as the parties may agree; or
- .4** As provided in Section 7.3.7.

**7.3.3.2** Consistent with Section 7.6, costs must be properly itemized and supported by substantiating data sufficient to permit evaluation before commencement of the pertinent performance or as soon after that as practicable. All costs incurred by the Contractor must be justifiably compared with prevailing industry standards. Except as provided in Section 7.5, all adjustments to the Contract Price shall be limited to job specific costs and shall not include indirect costs, overhead, home office overhead, or profit.

**3.53** *Delete Section 7.3.7 and substitute the following:*

**7.3.7** If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall make an initial determination, consistent with Section 7.3.3, of the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in Section 7.5. In such case, and also under Section 7.3.3.1.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1** Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .2** Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- .3** Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others; and
- .4** Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work.

**3.54** *Delete Section 7.3.8 and substitute the following:*

**7.3.8** Using the percentages stated in Section 7.5, any adjustment to the Contract Sum for deleted work shall include any overhead and profit attributable to the cost for the deleted Work.

**3.55** *Add the following Sections 7.5 and 7.6:*

#### **7.5 AGREED OVERHEAD AND PROFIT RATES**

**7.5.1** For any adjustment to the Contract Sum for which overhead and profit may be recovered, other than those made pursuant to Unit Prices stated in the Contract Documents, the Contractor agrees to charge and accept, as full payment for overhead and profit, the following percentages of costs attributable to the change in the Work. The percentages cited below shall be considered to include all indirect costs including, but not limited to: field and office managers, supervisors and assistants, incidental job burdens, small tools, and general overhead allocations. The allowable percentages for overhead and profit are as follows:

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- .1 To the Contractor for work performed by the Contractor's own forces, 17% of the Contractor's actual costs.
- .2 To each Subcontractor for work performed by the Subcontractor's own forces, 17% of the subcontractor's actual costs.
- .3 To the Contractor for work performed by a subcontractor, 10% of the subcontractor's actual costs (not including the subcontractor's overhead and profit).

### 7.6 PRICING DATA AND AUDIT

#### 7.6.1 Cost or Pricing Data.

Upon request of the Owner or Architect, Contractor shall submit cost or pricing data prior to execution of a Modification which exceeds \$500,000. Contractor shall certify that, to the best of its knowledge and belief, the cost or pricing data submitted is accurate, complete, and current as of a mutually determined specified date prior to the date of pricing the Modification. Contractor's price, including profit, shall be adjusted to exclude any significant sums by which such price was increased because Contractor furnished cost or pricing data that was inaccurate, incomplete, or not current as of the date specified by the parties. Notwithstanding Subparagraph 9.10.4, such adjustments may be made after final payment to the Contractor.

**7.6.2** Cost or pricing data means all facts that, as of the date specified by the parties, prudent buyers and sellers would reasonably expect to affect price negotiations significantly. Cost or pricing data are factual, not judgmental; and are verifiable. While they do not indicate the accuracy of the prospective contractor's judgment about estimated future costs or projections, they do include the data forming the basis for that judgment. Cost or pricing data are more than historical accounting data; they are all the facts that can be reasonably expected to contribute to the soundness of estimates of future costs and to the validity of determinations of costs already incurred.

#### 7.6.3 Records Retention.

As used in Section 7.6, the term "records" means any books or records that relate to cost or pricing data that Contractor is required to submit pursuant to Section 7.6.1. Contractor shall maintain records for three years from the date of final payment, or longer if requested by the chief procurement officer. The Owner may audit Contractor's records at reasonable times and places.

#### 3.56 Delete Section 8.2.2 and substitute the following:

**8.2.2** The Contractor shall not knowingly commence operations on the site or elsewhere prior to the effective date of surety bonds and insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such surety bonds or insurance.

#### 3.57 Delete Section 8.3.1 and substitute the following:

**8.3.1** If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the control of the Contractor and any subcontractor at any tier; or by delay authorized by the Owner pending dispute resolution; or by other causes that the Architect determines may justify delay, then to the extent such delay will prevent the Contractor from achieving Substantial Completion within the Contract Time and provided the delay (1) is not caused by the fault or negligence of the Contractor or a subcontractor at any tier and (2) is not due to unusual delay in the delivery of supplies, machinery, equipment, or services when such supplies, machinery, equipment, or services were obtainable from other sources in sufficient time for the Contractor to meet the required delivery, the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

#### 3.58 Insert the following at the end of Section 9.1:

All changes to the Contract Sum shall be adjusted in accordance with Section 7.3.3.

#### 3.59 Delete Section 9.2 and substitute the following:

### 9.2 SCHEDULE OF VALUES

**9.2.1** The Contractor shall submit to the Architect, within ten days of full execution of the Agreement, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. As requested by the Architect, the Contractor and each Subcontractor shall prepare a trade payment breakdown for the Work for which each is responsible, such breakdown being submitted on a uniform standardized format approved by the Architect and Owner. The breakdown shall be divided in detail, using convenient units, sufficient to accurately determine the value

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of completed Work during the course of the Project. The Contractor shall update the schedule of values as required by either the Architect or Owner as necessary to reflect:

- .1 the description of Work (listing labor and material separately);
- .2 the total value;
- .3 the percent and value of the Work completed to date;
- .4 the percent and value of previous amounts billed; and
- .5 the current percent completed and amount billed.

**9.2.2** Any schedule of values or trade breakdown that fails to include sufficient detail, is unbalanced, or exhibits "front-loading" of the value of the Work shall be rejected. If a schedule of values or trade breakdown is used as the basis for payment and later determined to be inaccurate, sufficient funds shall be withheld from future Applications for Payment to ensure an adequate reserve (exclusive of normal retainage) to complete the Work.

**3.60** *Delete Section 9.3.1 and substitute the following:*

Monthly, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2., for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require (such as copies of requisitions from Subcontractors and material suppliers) and shall reflect retainage and any other adjustments provided in Section 5 of the Agreement. If required by the Owner or Architect, the Application for Payment shall be accompanied by a current construction schedule.

**3.61** *In Section 9.3.2, add the following words to the end of the second sentence:*

provided such materials or equipment will be subsequently incorporated in the Work

*Insert the following at the end of Section 9.3.2:*

The Contractor shall 1) protect such materials from diversion, vandalism, theft, destruction, and damage, 2) mark such materials specifically for use on the Project, and 3) segregate such materials from other materials at the storage facility. The Architect and the Owner shall have the right to make inspections of the storage areas at any time.

**3.62** *In Section 9.4.2, in the first sentence, after the words "Work has progressed to the point indicated," insert the following:*

in both the Application for Payment and, if required to be submitted by the Contractor, the accompanying current construction schedule

*In the last sentence, delete the third item starting with "(3) reviewed copies" and ending with "Contractor's right to payment,"*

**3.63** *In Section 9.5.1, in the first sentence, delete the word "may" after the opening words "The Architect" and substitute the word "shall."*

*In Section 9.5.1, insert the following sentence after the first sentence:*

The Architect shall withhold a Certificate of Payment if the Application for Payment is not accompanied by the current construction schedule required by Section 3.10.1.

**3.64** *In Section 9.6.2, delete the word "The..." at the beginning of the first sentence and substitute the following:*

Pursuant to Chapter 6 of Title 29 of the South Carolina Code of Laws, as amended, the

**3.65** *Delete Section 9.7 and substitute following:*

**9.7 FAILURE OF PAYMENT**

If the Architect does not issue a Certificate for Payment to the Owner, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the time established in the Contract Documents the amount certified by the Architect or awarded by a final dispute resolution order, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased, in accordance with the provisions of Section 7.3.3, by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

**3.66** *Insert the following words at the end of the sentence in Section 9.8.1:*

and when all required occupancy permits, if any, have been issued and copies have been delivered to the Owner.

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**3.67** *In Section 9.8.2, insert the word “written” after the word “comprehensive” and before the word “list.”*

**3.68** *Delete Section 9.8.3 and substitute the following:*

**9.8.3.1** Upon receipt of the Contractor’s list, the Architect, with the Owner and any other person the Architect or the Owner choose, will make an inspection on a date and at a time mutually agreeable to the Architect, Owner, and Contractor, to determine whether the Work or designated portion thereof is substantially complete. The Contractor shall furnish access for the inspection and testing as provided in this Contract. The inspection shall include a demonstration by the Contractor that all equipment, systems and operable components of the Work function properly and in accordance with the Contract Documents. If the Architect’s inspection discloses any item, whether or not included on the Contractor’s list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion. If more than one Substantial Completion inspection is required, the Contractor shall reimburse the Owner for all costs of reinspections or, at the Owner’s option, the costs may be deducted from payments due to the Contractor.

**9.8.3.2** If the Architect and Owner concur in the Contractor’s assessment that the Work or a portion of the Work is safe to occupy, the Owner and Contractor may arrange for a Certificate of Occupancy Inspection by OSE. The Owner, Architect, and Contractor shall be present at OSE’s inspection. Upon verifying that the Work or a portion of the Work is substantially complete and safe to occupy, OSE will issue, as appropriate, a Full or Partial Certificate of Occupancy.

**3.69** *In the second sentence of Section 9.8.5, delete the words “and consent of surety, if any.”*

**3.70** *In the first sentence of Section 9.9.1, delete the words “Section 11.3.1.5” and substitute the words “Section 11.3.1.3.”*

**3.71** *Delete Section 9.10.1 and substitute the following:*

**9.10.1** Unless the parties agree otherwise in the Certificate of Substantial Completion, the Contractor shall achieve Final Completion no later than thirty days after Substantial Completion. Upon receipt of the Contractor’s written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect, with the Owner and any other person the Architect or the Owner choose, will make an inspection on a date and at a time mutually agreeable to the Architect, Owner, and Contractor, and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect’s knowledge, information and belief, and on the basis of the Architect’s on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect’s final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor’s being entitled to final payment have been fulfilled. If more than one Final Completion inspection is required, the Contractor shall reimburse the Owner for all costs of reinspections or, at the Owner’s option, the costs may be deducted from payments due to the Contractor. If the Contractor does not achieve final completion within thirty days after Substantial Completion or the timeframe agreed to by the parties in the Certificate of Substantial Completion, whichever is greater, the Contractor shall be responsible for any additional Architectural fees resulting from the delay.

**3.72** *Delete the first sentence of Section 9.10.2 and substitute the following:*

Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner’s property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days’ prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner, (6) required Training Manuals, (7) equipment Operations and Maintenance Manuals, (8) any certificates of testing, inspection or approval required by the Contract Documents and not previously provided (9) all warranties and guarantees required under or pursuant to the Contract Documents, and (10) one copy of the Documents required by Section 3.11.

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**3.73** Delete the first sentence of Section 9.10.3 and substitute the following:

If, after Substantial Completion of the Work, final completion thereof is delayed 60 days through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted.

**3.74** Delete Section 9.10.5 and substitute the following:

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

**3.75** Add the following Section 9.10.6:

**9.10.6** If OSE has not previously issued a Certificate of Occupancy for the entire Project, the Parties shall arrange for a representative of OSE to participate in the Final Completion Inspection. Representatives of the State Fire Marshal's Office and other authorities having jurisdiction may be present at the Final Completion Inspection or otherwise inspect the completed Work and advise the Owner whether the Work meets their respective requirements for the Project.

**3.76** Delete Section 10.3.1 and substitute the following:

**10.3.1** If the Contractor encounters a hazardous material or substance which was not discoverable as provided in Section 3.2.1 and not required by the Contract Documents, and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons or serious loss to real or personal property resulting from such material or substance encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing. Hazardous materials or substances are those hazardous, toxic, or radioactive materials or substances subject to regulations by applicable governmental authorities having jurisdiction, such as, but not limited to, the S.C. Department of Health and Environmental Control, the U.S. Environmental Protection Agency, and the U.S. Nuclear Regulatory Commission.

**3.77** Insert the following at the end of Section 10.3.2:

In the absence of agreement, the Architect will make an interim determination regarding any delay or impact on the Contractor's additional costs. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15. Any adjustment in the Contract Sum shall be determined in accordance with Section 7.3.3.

**3.78** Delete Section 10.3.3 and substitute the following:

**10.3.3** The Work in the affected area shall be resumed immediately following the occurrence of any one of the following events: (a) the Owner causes remedial work to be performed that results in the absence of hazardous materials or substances; (b) the Owner and the Contractor, by written agreement, decide to resume performance of the Work; or (c) the Work may safely and lawfully proceed, as determined by an appropriate governmental authority or as evidenced by a written report to both the Owner and the Contractor, which is prepared by an environmental engineer reasonably satisfactory to both the Owner and the Contractor.

**3.79** In Section 10.3.5, delete the word "The" at the beginning of the sentence and substitute the following:

In addition to its obligations under Section 3.18, the

**3.80** Delete the language of Section 10.3.6 and substitute the word "Reserved."

**3.81** Insert the following at the end of Section 10.4:

The Contractor shall immediately give the Architect notice of the emergency. This initial notice may be oral followed within five days by a written notice setting forth the nature and scope of the emergency. Within fourteen days of the start of the emergency, the Contractor shall give the Architect a written estimate of the cost and probable effect of delay on the progress of the Work.

**3.82** Delete 11.1.2 and substitute the following:

**11.1.2** The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified below or required by law, whichever coverage is greater. Coverages shall be written on an occurrence basis and shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

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- (1) COMMERCIAL GENERAL LIABILITY:
- (a) General Aggregate (per project) ..... \$1,000,000
  - (b) Products/Completed Operations ..... \$1,000,000
  - (c) Personal and Advertising Injury ..... \$1,000,000
  - (d) Each Occurrence ..... \$1,000,000
  - (e) Fire Damage (Any one fire) ..... \$50,000
  - (f) Medical Expense (Any one person) ..... \$5,000
- (2) BUSINESS AUTO LIABILITY (including All Owned, Non-owned, and Hired Vehicles):
- (a) Combined Single Limit ..... \$1,000,000
- (3) WORKER'S COMPENSATION:
- (a) State Statutory
  - (b) Employers Liability ..... \$100,000 Per Acc.  
..... \$500,000 Disease, Policy Limit  
..... \$100,000 Disease, Each Employee

In lieu of separate insurance policies for Commercial General Liability, Business Auto Liability, and Employers Liability, the Contractor may provide an umbrella policy meeting or exceeding all coverage requirements set forth in this Section 11.1.2. The umbrella policy limits shall not be less than \$3,000,000.

**3.83** *Delete Section 11.1.3 and substitute the following:*

**11.1.3** Prior to commencement of the Work, and thereafter upon replacement of each required policy of insurance, Contractor shall provide to the Owner a written endorsement to the Contractor's general liability insurance policy that:

- (i) names the Owner as an additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations;
- (ii) provides that no material alteration, cancellation, non-renewal, or expiration of the coverage contained in such policy shall have effect unless all additional insureds have been given at least ten (10) days prior written notice of cancellation for non-payment of premiums and thirty (30) days prior written notice of cancellation for any other reason; and
- (iii) provides that the Contractor's liability insurance policy shall be primary, with any liability insurance of the Owner as secondary and noncontributory.

Prior to commencement of the Work, and thereafter upon renewal or replacement of each required policy of insurance, Contractor shall provide to the Owner a signed, original certificate of liability insurance (ACORD 25). Consistent with this Section 11.1, the certificate shall identify the types of insurance, state the limits of liability for each type of coverage, name the Owner a Consultants as Certificate Holder, provide that the general aggregate limit applies per project, and provide that coverage is written on an occurrence basis. Both the certificates and the endorsements must be received directly from either the Contractor's insurance agent or the insurance company. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, naming the Owner as an additional insured for claims made under the Contractor's completed operations, and otherwise meeting the above requirements, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

**3.84** *Delete Section 11.1.4 and substitute the following:*

**11.1.4** A failure by the Owner either (i) to demand a certificate of insurance or written endorsement required by Section 11.1, or (ii) to reject a certificate or endorsement on the grounds that it fails to comply with Section 11.1 shall not be considered a waiver of Contractor's obligations to obtain the required insurance.

**3.85** *In Section 11.3.1, delete the first sentence and substitute the following:*

Unless otherwise provided in the Contract Documents, the Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis.

**3.86** *Delete the language of Section 11.3.1.2 and substitute the word "Reserved."*

**3.87** *Delete the language of Section 11.3.1.3 and substitute the word "Reserved."*

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**3.88** Delete Section 11.3.2 and substitute the following:

#### **11.3.2 BOILER AND MACHINERY INSURANCE**

The Contractor shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall both be named insureds.

**3.89** Delete Section 11.3.3 and substitute the following:

#### **11.3.3 LOSS OF USE INSURANCE**

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. To the extent any losses are covered and paid for by such insurance, the Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

**3.90** Delete Section 11.3.4 and substitute the following:

**11.3.4** If the Owner requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Contractor shall, if possible, include such insurance, and the cost thereof shall be charged to the Owner by appropriate Change Order.

**3.91** Delete the language of Section 11.3.5 and substitute the word "Reserved."

**3.92** Delete Section 11.3.6 and substitute the following:

**11.3.6** Before an exposure to loss may occur, the Contractor shall file with the Owner a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Owner.

**3.93** Delete the first sentence of Section 11.3.7 and substitute the following:

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent the property insurance provided by the Contractor pursuant to this Section 11.3 covers and pays for the damage, except such rights as they have to proceeds of such insurance held by the Contractor as fiduciary.

**3.94** Delete the first sentence of Section 11.3.8 and substitute the following:

A loss insured under the Contractor's property insurance shall be adjusted by the Contractor as fiduciary and made payable to the Contractor as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10.

**3.95** Delete Section 11.3.9 and substitute the following:

**11.3.9** If required in writing by a party in interest, the Contractor as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Contractor's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Contractor shall deposit in a separate account proceeds so received, which the Contractor shall distribute in accordance with such agreement as the parties in interest may reach. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor.

**3.96** Delete Section 11.3.10 and substitute the following:

**11.3.10** The Contractor as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Contractor's exercise of this power; if such objection is made, the dispute shall be resolved in the manner provided in the contract between the parties in dispute as the method of binding dispute resolution. The Contractor as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with a final order or determination issued by the appropriate authority having jurisdiction over the dispute.

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### 3.97 *Delete Section 11.4.1 and substitute the following:*

**11.4.1** Before commencing any services hereunder, the Contractor shall provide the Owner with Performance and Payment Bonds, each in an amount not less than the Contract Price set forth in Article 4 of the Agreement. The Surety shall have, at a minimum, a "Best Rating" of "A" as stated in the most current publication of "Best's Key Rating Guide, Property-Casualty". In addition, the Surety shall have a minimum "Best Financial Strength Category" of "Class V", and in no case less than five (5) times the contract amount. The Performance Bond shall be written on Form SE-355, "Performance Bond" and the Payment Bond shall be written on Form SE-357, "Labor and Material Payment Bond", and both shall be made payable to the Owner.

### 3.98 *Delete Section 11.4.2 and substitute the following:*

**11.4.2** The Performance and Labor and Material Payment Bonds shall:

- .1 be issued by a surety company licensed to do business in South Carolina;
- .2 be accompanied by a current power of attorney and certified by the attorney-in-fact who executes the bond on the behalf of the surety company; and
- .3 remain in effect for a period not less than one (1) year following the date of Substantial Completion or the time required to resolve any items of incomplete Work and the payment of any disputed amounts, whichever time period is longer.

### 3.99 *Add the following Sections 11.4.3 and 11.4.4:*

**11.4.3** Any bonds required by this Contract shall meet the requirements of the South Carolina Code of Laws and Regulations, as amended.

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

### 3.100 *Delete Section 12.1.1 and substitute the following:*

**12.1.1** If a portion of the Work is covered contrary to the requirements specifically expressed in the Contract Documents, including inspections of work-in-progress required by all authorities having jurisdiction over the Project, it must, upon demand of the Architect or authority having jurisdiction, be uncovered for observation and be replaced at the Contractor's expense without change in the Contract Time.

### 3.101 *In Section 12.2.2.1, delete the words "and to make a claim for breach of warranty" at the end of the third sentence.*

### 3.102 *In Section 12.2.2.3, add the following to the end of the sentence:*

unless otherwise provided in the Contract Documents.

### 3.103 *Insert the following at the end of Section 12.2.4:*

If, prior to the date of Substantial Completion, the Contractor, a Subcontractor, or anyone for whom either is responsible, uses or damages any portion of the Work, including, without limitation, mechanical, electrical, plumbing, and other building systems, machinery, equipment, or other mechanical device, the Contractor shall cause such item to be restored to "like new" condition at no expense to the Owner.

### 3.104 *Delete Section 13.1 and substitute the following:*

#### **13.1 GOVERNING LAW**

The Contract, any dispute, claim, or controversy relating to the Contract, and all the rights and obligations of the parties shall, in all respects, be interpreted, construed, enforced and governed by and under the laws of the State of South Carolina, except its choice of law rules.

### 3.105 *Delete Section 13.2, including its Sub-Sections 13.2.1 and 13.2.2, and substitute the following:*

#### **13.2 SUCCESSORS AND ASSIGNS**

The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole, or in part, without written consent of the other and then only in accordance with and as permitted by Regulation 19-445.2180 of the South Carolina Code of Regulations, as amended. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.



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**3.106** Delete Section 13.3 and substitute the following:

### 13.3 WRITTEN NOTICE

Unless otherwise permitted herein, all notices contemplated by the Contract Documents shall be in writing and shall be deemed given:

- .1 upon actual delivery, if delivery is by hand;
- .2 upon receipt by the transmitting party of confirmation or reply, if delivery is by electronic mail, facsimile, telex or telegram;
- .3 upon receipt, if delivery is by the United States mail.

Notice to Contractor shall be to the address provided in Section 8.3.2 of the Agreement. Notice to Owner shall be to the address provided in Section 8.2.2 of the Agreement. Either party may designate a different address for notice by giving notice in accordance with this paragraph.

**3.107** In Section 13.4.1, insert the following at the beginning of the sentence:

Unless expressly provided otherwise,

**3.108** Add the following Section 13.4.3:

**13.4.3** Notwithstanding Section 9.10.4, the rights and obligations which, by their nature, would continue beyond the termination, cancellation, rejection, or expiration of this contract shall survive such termination, cancellation, rejection, or expiration, including, but not limited to, the rights and obligations created by the following clauses:

- 1.5** Ownership and Use of Drawings, Specifications and Other Instruments of Service;
- 3.5** Warranty
- 3.17** Royalties, Patents and Copyrights
- 3.18** Indemnification
- 7.6** Cost or Pricing Data
- 11.1** Contractor's Liability Insurance
- 11.4** Performance and Payment Bond
- 15.1.6** Claims for Listed Damages
- 15.1.7** Waiver of Claims Against the Architect
- 15.6** Dispute Resolution
- 15.6.5** Service of Process

**3.109** Delete Section 13.6 and substitute the following:

### 13.6 INTEREST

Payments due to the Contractor and unpaid under the Contract Documents shall bear interest only if and to the extent allowed by Title 29, Chapter 6, Article 1 of the South Carolina Code of Laws. Amounts due to the Owner shall bear interest at the rate of one percent a month or a pro rata fraction thereof on the unpaid balance as may be due.

**3.110** Delete the language of Section 13.7 and substitute the word "Reserved."

**3.111** Add the following Sections 13.8 through 13.16:

### 13.8 PROCUREMENT OF MATERIALS BY OWNER

The Contractor accepts assignment of all purchase orders and other agreements for procurement of materials and equipment by the Owner that are identified as part of the Contract Documents. The Contractor shall, upon delivery, be responsible for the storage, protection, proper installation, and preservation of such Owner purchased items, if any, as if the Contractor were the original purchaser. The Contract Sum includes, without limitation, all costs and expenses in connection with delivery, storage, insurance, installation, and testing of items covered in any assigned purchase orders or agreements. Unless the Contract Documents specifically provide otherwise, all Contractor warranty of workmanship and correction of the Work obligations under the Contract Documents shall apply to the Contractor's installation of and modifications to any Owner purchased items.

### 13.9 INTERPRETATION OF BUILDING CODES

As required by Title 10, Chapter 1, Section 180 of the South Carolina Code of Laws, as amended, OSE shall determine the enforcement and interpretation of all building codes and referenced standards on state buildings. The Contractor shall refer any questions, comments, or directives from local officials to the Owner and OSE for resolution.

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#### 13.10 MINORITY BUSINESS ENTERPRISES

Contractor shall notify Owner of each Minority Business Enterprise (MBE) providing labor, materials, equipment, or supplies to the Project under a contract with the Contractor. Contractor's notification shall be via the first monthly status report submitted to the Owner after execution of the contract with the MBE. For each such MBE, the Contractor shall provide the MBE's name, address, and telephone number, the nature of the work to be performed or materials or equipment to be supplied by the MBE, whether the MBE is certified by the South Carolina Office of Small and Minority Business Assistance, and the value of the contract.

#### 13.11 SEVERABILITY

If any provision or any part of a provision of the Contract Documents shall be finally determined to be superseded, invalid, illegal, or otherwise unenforceable pursuant to any applicable Legal Requirements, such determination shall not impair or otherwise affect the validity, legality, or enforceability of the remaining provision or parts of the provision of the Contract Documents, which shall remain in full force and effect as if the unenforceable provision or part were deleted.

#### 13.12 ILLEGAL IMMIGRATION

Contractor certifies and agrees that it will comply with the applicable requirements of Title 8, Chapter 14 of the South Carolina Code of Laws and agrees to provide to the State upon request any documentation required to establish either: (a) that Title 8, Chapter 14 is inapplicable both to Contractor and its subcontractors or sub-subcontractors; or (b) that Contractor and its subcontractors or sub-subcontractors are in compliance with Title 8, Chapter 14. Pursuant to Section 8-14-60, "A person who knowingly makes or files any false, fictitious, or fraudulent document, statement, or report pursuant to this chapter is guilty of a felony and, upon conviction, must be fined within the discretion of the court or imprisoned for not more than five years, or both." Contractor agrees to include in any contracts with its subcontractors language requiring its subcontractors to (a) comply with the applicable requirements of Title 8, Chapter 14, and (b) include in their contracts with the sub-subcontractors language requiring the sub-subcontractors to comply with the applicable requirements of Title 8, Chapter 14. (An overview is available at [www.procurement.sc.gov](http://www.procurement.sc.gov))

#### 13.13 SETOFF

The Owner shall have all of its common law, equitable, and statutory rights of set-off.

#### 13.14 DRUG-FREE WORKPLACE

The Contractor certifies to the Owner that Contractor will provide a Drug-Free Workplace, as required by Title 44, Chapter 107 of the South Carolina Code of Laws, as amended.

#### 13.15 FALSE CLAIMS

According to the S.C. Code of Laws § 16-13-240, "a person who by false pretense or representation obtains the signature of a person to a written instrument or obtains from another person any chattel, money, valuable security, or other property, real or personal, with intent to cheat and defraud a person of that property is guilty" of a crime.

#### 13.16 NON-INDEMNIFICATION:

Any term or condition is void to the extent it requires the State to indemnify anyone. It is unlawful for a person charged with disbursements of state funds appropriated by the General Assembly to exceed the amounts and purposes stated in the appropriations. (§ 11-9-20) It is unlawful for an authorized public officer to enter into a contract for a purpose in which the sum is in excess of the amount appropriated for that purpose. It is unlawful for an authorized public officer to divert or appropriate the funds arising from any tax levied and collected for any one fiscal year to the payment of an indebtedness contracted or incurred for a previous year. (§ 11-1-40)

#### 3.112 Delete Section 14.1.1 and substitute the following:

**14.1.1** The Contractor may terminate the Contract if the Work is stopped for a period of 45 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires substantially all Work to be stopped; or
- .2 An act of government, such as a declaration of national emergency that requires substantially all Work to be stopped.
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents and the Contractor has stopped work in accordance with Section 9.7

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**3.113** *Insert the following at the end of Section 14.1.3:*

Any adjustment to the Contract Sum pursuant to this Section shall be made in accordance with the requirements of Article 7.

**3.114** *In Section 14.1.4, replace the word “repeatedly” with the word “persistently.”*

**3.115** *Delete Section 14.2.1 and substitute the following:*

**14.2.1** The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials, or otherwise fails to prosecute the Work, or any separable part of the Work, with the diligence, resources and skill that will ensure its completion within the time specified in the Contract Documents, including any authorized adjustments;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the Contract Documents and the respective agreements between the Contractor and the Subcontractors;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

**3.116** *In Section 14.2.2, delete the parenthetical statement “, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action,” immediately following the word “Owner” in the first line.*

**3.117** *In Section 14.2.4, replace the words “Initial Decision Maker” with the word “Architect”*

**3.118** *Add the following Section 14.2.5:*

**14.2.5** If, after termination for cause, it is determined that the Owner lacked justification to terminate under Section 14.2.1, or that the Contractor’s default was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the Owner under Section 14.4.

**3.119** *Delete the second sentence of Section 14.3.2 and substitute the following:*

Any adjustment to the Contract Sum made pursuant to this section shall be made in accordance with the requirements of Article 7.3.3.

**3.120** *Delete Section 14.4.1 and substitute the following:*

**14.4.1** The Owner may, at any time, terminate the Contract, in whole or in part for the Owner’s convenience and without cause. The Owner shall give written notice of the termination to the Contractor specifying the part of the Contract terminated and when termination becomes effective.

**3.121** *Delete Section 14.4.2 and substitute the following:*

**14.4.2** Upon receipt of written notice from the Owner of such termination for the Owner’s convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work;
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders; and
- .4 complete the performance of the Work not terminated, if any.

**3.122** *Delete Section 14.4.3 and substitute the following:*

**14.4.3** In case of such termination for the Owner’s convenience, the Contractor shall be entitled to receive payment for Work executed, costs incurred by reason of such termination, and any other adjustments otherwise allowed by the Contract. Any adjustment to the Contract Sum made pursuant to this Section 14.4 shall be made in accordance with the requirements of Article 7.3.3.

**3.123** *Add the following Sections 14.4.4, 14.4.5, and 14.5:*

**14.4.4** Contractor's failure to include an appropriate termination for convenience clause in any subcontract shall not (i) affect the Owner's right to require the termination of a subcontract, or (ii) increase the obligation of the Owner beyond what it would have been if the subcontract had contained an appropriate clause.

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**14.4.5** Upon written consent of the Contractor, the Owner may reinstate the terminated portion of this Contract in whole or in part by amending the notice of termination if it has been determined that:

- .1 the termination was due to withdrawal of funding by the General Assembly, Governor, or Budget and Control Board or the need to divert project funds to respond to an emergency as defined by Regulation 19-445.2110(B) of the South Carolina Code of Regulations, as amended;
- .2 funding for the reinstated portion of the work has been restored;
- .3 circumstances clearly indicate a requirement for the terminated work; and
- .4 reinstatement of the terminated work is advantageous to the Owner.

**14.5 CANCELLATION AFTER AWARD BUT PRIOR TO PERFORMANCE**

Pursuant to Title 11, Chapter 35 and Regulation 19-445.2085 of the South Carolina Code of Laws and Regulations, as amended, this contract may be canceled after award but prior to performance.

**3.124** *Insert the following sentence after the second sentence of Section 15.1.1:*

A voucher, invoice, payment application or other routine request for payment that is not in dispute when submitted is not a Claim under this definition.

**3.125** *Delete Section 15.1.2 and substitute the following:***15.1.2 NOTICE OF CLAIMS**

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Architect. Such notice shall include sufficient information to advise the Architect and other party of the circumstances giving rise to the claim, the specific contractual adjustment or relief requested and the basis of such request. Claims by either party arising prior to the date final payment is due must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later except as stated for adverse weather days in Section 15.1.5.2. By failing to give written notice of a Claim within the time required by this Section, a party expressly waives its claim.

**3.126** *Delete Section 15.1.3 and substitute the following:***15.1.3 CONTINUING CONTRACT PERFORMANCE**

Pending final resolution of a Claim, including any administrative review allowed under Section 15.6, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will issue Certificates for Payment in accordance with the initial decisions and determinations of the Architect.

**3.127** *Insert the following at the end of Section 15.1.5.1:*

Claims for an increase in the Contract Time shall be based on one additional calendar day for each full calendar day that the Contractor is prevented from working.

**3.128** *Insert the following Sub-Sections at the end of Section 15.1.5.2:*

- .1 Claims for adverse weather shall be based on actual weather conditions at the job site or other place of performance of the Work, as documented in the Contractor's job site log.
- .2 For the purpose of this Contract, a total of five (5) days per calendar month (non-cumulative) shall be anticipated as "adverse weather" at the job site, and such time will not be considered justification for an extension of time. If, in any month, adverse weather develops beyond the five (5) days, the Contractor shall be allowed to claim additional days to compensate for the excess weather delays only to the extent of the impact on the approved construction schedule and days the contractor was already scheduled to work. The remedy for this condition is for an extension of time only and is exclusive of all other rights and remedies available under the Contract Documents or imposed or available by law.
- .3 The Contractor shall submit monthly with their pay application all claims for adverse weather conditions that occurred during the previous month. The Architect shall review each monthly submittal in accordance with Section 15.5 and inform the Contractor and the Owner promptly of its evaluation. Approved days shall be included in the next Change Order issued by the Architect. Adverse weather conditions not claimed within the time limits of this Subparagraph shall be considered to be waived by the Contractor. Claims will not be allowed for adverse weather days that occur after the scheduled (original or adjusted) date of Substantial Completion.

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#### **3.129** *Delete Section 15.1.6 and substitute the following:*

##### **15.1.6 CLAIMS FOR LISTED DAMAGES**

Notwithstanding any other provision of the Contract Documents, including Section 1.2.1, but subject to a duty of good faith and fair dealing, the Contractor and Owner waive Claims against each other for listed damages arising out of or relating to this Contract.

**15.1.6.1** For the Owner, listed damages are (i) lost revenue and profit, (ii) losses resulting from injury to business or reputation, (iii) additional or escalated overhead and administration expenses, (iv) additional financing costs, (v) costs suffered by a third party unable to commence work, (vi) attorney's fees, (vii) any interest, except to the extent allowed by Section 13.6 (Interest), (viii) lost revenue and profit for lost use of the property, (ix) costs resulting from lost productivity or efficiency.

**15.1.6.2** For the Contractor, listed damages are (i) lost revenue and profit, (ii) losses resulting from injury to business or reputation, (iii) additional or escalated overhead and administration expenses, (iv) additional financing costs, (v) attorney's fees, (vi) any interest, except to the extent allowed by Section 13.6 (Interest); (vii) unamortized equipment costs; and, (viii) losses incurred by subcontractors for the types of damages the Contractor has waive as against the Owner. Without limitation, this mutual waiver is applicable to all damages due to either party's termination in accordance with Article 14.

**15.1.6.3** Nothing contained in this Section shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents. This mutual waiver is not applicable to amounts due or obligations under Section 3.18 (Indemnification).

#### **3.130** *Add the following Section 15.1.7:*

##### **15.1.7 WAIVER OF CLAIMS AGAINST THE ARCHITECT**

Notwithstanding any other provision of the Contract Documents, including Section 1.2.1, but subject to a duty of good faith and fair dealing, the Contractor waives all claims against the Architect and any other design professionals who provide design and/or project management services to the Owner, either directly or as independent contractors or subcontractors to the Architect, for listed damages arising out of or relating to this Contract. The listed damages are (i) lost revenue and profit, (ii) losses resulting from injury to business or reputation, (iii) additional or escalated overhead and administration expenses, (iv) additional financing costs, (v) attorney's fees, (vi) any interest; (vii) unamortized equipment costs; and, (viii) losses incurred by subcontractors for the types of damages the Contractor has waive as against the Owner. This mutual waiver is not applicable to amounts due or obligations under Section 3.18 (Indemnification).

#### **3.131** *Delete the language of Sections 15.2, 15.3, and 15.4, including all Sub-Sections, and substitute the word "Reserved" for the deleted language of each Section and Sub-Section.*

#### **3.132** *Add the following Sections 15.5 and 15.6 with their sub-sections:*

##### **15.5 CLAIM AND DISPUTES - DUTY OF COOPERATION, NOTICE, AND ARCHITECTS INITIAL DECISION**

**15.5.1** Contractor and Owner are fully committed to working with each other throughout the Project to avoid or minimize claims. To further this goal, Contractor and Owner agree to communicate regularly with each other and the Architect at all times notifying one another as soon as reasonably possible of any issue that if not addressed may cause loss, delay, and/or disruption of the Work. If claims do arise, Contractor and Owner each commit to resolving such claims in an amicable, professional, and expeditious manner to avoid unnecessary losses, delays, and disruptions to the Work.

**15.5.2** Claims shall first be referred to the Architect for initial decision. An initial decision shall be required as a condition precedent to resolution pursuant to Section 15.6 of any Claim arising prior to the date of final payment, unless 30 days have passed after the Claim has been referred to the Architect with no decision having been rendered, or after all the Architect's requests for additional supporting data have been answered, whichever is later. The Architect will not address claims between the Contractor and persons or entities other than the Owner.

**15.5.3** The Architect will review Claims and within ten days of the receipt of a Claim (1) request additional supporting data from the claimant or a response with supporting data from the other party or (2) render an initial decision in accordance with Section 15.5.5.

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- 15.5.4** If the Architect requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Architect when the response or supporting data will be furnished or (3) advise the Architect that all supporting data has already been provided. Upon receipt of the response or supporting data, the Architect will render an initial decision in accordance with Section 15.5.5.
- 15.5.5** The Architect will render an initial decision in writing; (1) stating the reasons therefor; and (2) notifying the parties of any change in the Contract Sum or Contract Time or both. The Architect will deliver the initial decision to the parties within two weeks of receipt of any response or supporting data requested pursuant to Section 16.4 or within such longer period as may be mutually agreeable to the parties. If the parties accept the initial decision, the Architect shall prepare a Change Order with appropriate supporting documentation for the review and approval of the parties and the Office of State Engineer. If either the Contractor, Owner, or both, disagree with the initial decision, the Contractor and Owner shall proceed with dispute resolution in accordance with the provisions of Section 15.6.
- 15.5.6** In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

**15.6 DISPUTE RESOLUTION**

- 15.6.1** If a claim is not resolved pursuant to Section 15.5 to the satisfaction of either party, both parties shall attempt to resolve the dispute at the field level through discussions between Contractor's Representative and Owner's Representative. If a dispute cannot be resolved through Contractor's Representative and Owner's Representative, then the Contractor's Senior Representative and the Owner's Senior Representative, upon the request of either party, shall meet as soon as conveniently possible, but in no case later than twenty-one days after such a request is made, to attempt to resolve such dispute. Prior to any meetings between the Senior Representatives, the parties will exchange relevant information that will assist the parties in resolving their dispute. The meetings required by this Section are a condition precedent to resolution pursuant to Section 15.6.2.
- 15.6.2** If after meeting in accordance with the provisions of Section 15.6.1, the Senior Representatives determine that the dispute cannot be resolved on terms satisfactory to both the Contractor and the Owner, then either party may submit the dispute by written request to South Carolina's Chief Procurement Officer for Construction (CPOC). Except as otherwise provided in Article 15, all claims, claims, or controversies relating to the Contract shall be resolved exclusively by the appropriate Chief Procurement Officer in accordance with Title 11, Chapter 35, Article 17 of the South Carolina Code of Laws, or in the absence of jurisdiction, only in the Court of Common Pleas for, or in the absence of jurisdiction a federal court located in, Richland County, State of South Carolina. Contractor agrees that any act by the State regarding the Contract is not a waiver of either the State's sovereign immunity or the State's immunity under the Eleventh Amendment of the United State's Constitution.
- 15.6.3** If any party seeks resolution to a dispute pursuant to Section 15.6.2, the parties shall participate in non-binding mediation to resolve the claim. If the claim is governed by Title 11, Chapter 35, Article 17 of the South Carolina Code of Laws as amended and the amount in controversy is \$100,000.00 or less, the CPOC shall appoint a mediator, otherwise, the mediation shall be conducted by an impartial mediator selected by mutual agreement of the parties, or if the parties cannot so agree, a mediator designated by the American Arbitration Association ("AAA") pursuant to its Construction Industry Mediation Rules. The mediation will be governed by and conducted pursuant to a mediation agreement negotiated by the parties or, if the parties cannot so agree, by procedures established by the mediator.
- 15.6.4** Without relieving any party from the other requirements of Sections 15.5 and 15.6, either party may initiate proceedings in the appropriate forum prior to initiating or completing the procedures required by Sections 15.5 and 15.6 if such action is necessary to preserve a claim by avoiding the application of any applicable statutory period of limitation or repose.

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**15.6.5 SERVICE OF PROCESS**

Contractor consents that any papers, notices, or process necessary or proper for the initiation or continuation of any claims, claims, or controversies relating to the Contract; for any court action in connection therewith; or for the entry of judgment on any award made, may be served on Contractor by certified mail (return receipt requested) addressed to Contractor at the address provided for the Contractor's Senior Representative or by personal service or by any other manner that is permitted by law, in or outside South Carolina. Notice by certified mail is deemed duly given upon deposit in the United States mail.

**3.133 Add the following Article 16:**

**ARTICLE 16 PROJECT-SPECIFIC REQUIREMENTS AND INFORMATION**

**16.1. Inspection Requirements:** *(Indicate the inspection services required by the Contract)*

- Special Inspections are required and are not part of the Contract Sum. *(see section 01400)*
- Building Inspections are required and are not part of the Contract Sum. *(see section 01400)*

The inspections required for this Work are:

*(Indicate which services are required and the provider)*

- Civil: \_\_\_\_\_
- Structural: \_\_\_\_\_
- Mechanical: \_\_\_\_\_
- Plumbing: \_\_\_\_\_
- Electrical: \_\_\_\_\_
- Gas: \_\_\_\_\_
- Other *(list)*: \_\_\_\_\_

Remarks: All inspections will be procured directly by USC

**16.1.1** Contractor shall schedule and request inspections in an orderly and efficient manner and shall notify the Owner whenever the Contractor schedules an inspection in accordance with the requirements of Section 16.1. Contractor shall be responsible for the cost of inspections scheduled and conducted without the Owner's knowledge and for any increase in the cost of inspections resulting from the inefficient scheduling of inspections.

**16.2** List Cash Allowances, if any. *(Refer to attachments as needed. If none, enter NONE)*

None

**16.3.** Requirements for Record Drawings, if any. *(Refer to attachments as needed. If none, enter NONE)*

None

**16.4.** Requirements for Shop Drawings and other submittals, if any, including number, procedure for submission, list of materials to be submitted, etc. *(Refer to attachments as needed. If none, enter NONE)*

None

**16.5.** Requirements for signage, on-site office or trailer, utilities, restrooms, etc., in addition to the Contract, if any. *(Refer to attachments as needed. If none, enter NONE)*

None

**16.6.** Requirements for Project Cleanup in addition to the Contract, if any. *(Refer to attachments as needed. If none, enter NONE)*

None

**16.7.** List all attachments that modify these General Conditions. *(If none, enter NONE)*

None

USC SUPPLEMENTAL GENERAL CONDITIONS  
FOR CONSTRUCTION PROJECTS

1. Contractor's employees shall take all reasonable means not to interrupt the flow of student traffic in building corridors, lobbies and stairs. All necessary and reasonable safety precautions shall be taken to prevent injury to building occupants while transporting materials and equipment through the building to the work area. Providing safe, accessible, plywood pedestrian ways around construction may be required if a suitable alternative route is not found.
2. Fraternalization between Contractor's employees and USC students, faculty or staff is strictly prohibited-zero tolerance!
3. USC will not tolerate rude, abusive or degrading behavior on the job site. Heckling and cat-calling directed toward students, faculty or staff or any other person on USC property is strictly prohibited. Any contractor whose employees violate this requirement will be assessed a fine of up to \$500 per violation.
4. Contractor's employees must adhere to the University's policy of maintaining a drug-free and smoke-free/tobacco-free workplace.
5. Contractor must sign a Contractor Key Receipt/Return form before any keys are issued. Keys must be returned immediately upon the completion of the work. The Contractor will bear the cost of any re-keying necessary due to the loss of or failure to return keys.
6. A welding permit must be issued by the University Fire Marshall before any welding can begin inside a building. Project Manager will coordinate.
7. Contractor must notify the University immediately upon the discovery of suspect materials such as those potentially containing asbestos or other such hazardous materials. These materials must not be disturbed until approved by the USC Project Manager.
8. At the beginning of the project, the USC Project Manager will establish the Contractor's lay down area. This area will also be used for the Contractor's work vehicles. No personal vehicles will be allowed in this area, or in any areas surrounding the construction site that are not regular or authorized parking lots. Personal vehicles must be parked in the perimeter parking lots. Parking permits can be obtained at the USC Parking Office located in the Pendleton Street parking garage. The lay down area will be clearly identified to the contractor by the PM, with a sketch or drawing provided to Parking. In turn, the contractor will mark off this area with a sign containing the project name, PM name and contact number, and end date. Where this area is subject to foot traffic, protective barriers will be provided as specified by the PM. The area will be maintained in a neat and orderly fashion. Vehicles parked in the lay down area (or designated parking areas) will be clearly marked or display a CPC furnished placard for identification.
9. Contractor will be responsible for providing its own temporary toilet facilities, unless prior arrangements are made with the USC Project Manager.
10. Use of USC communications facilities (telephones, computers, etc.) by the Contractor is prohibited, unless prior arrangements are made with the USC Project Manager.



11. For all projects over \$100,000, including IDC's, an SE-395, Contractor Performance Evaluation, will be completed by the USC Project Manager and reviewed with the GC at the beginning of the project and a copy given to the GC. At the end of the project the form will be completed and a Construction Performance rating will be established.
12. Contractor is responsible for removal of all debris from the site, and is required to provide the necessary dumpsters which will be emptied at least two (2) times per week. Construction waste must not be placed in University dumpsters. THE CONSTRUCTION SITE MUST BE THOROUGHLY CLEANED WITH ALL TRASH PICKED UP AND PROPERLY DISPOSED OF ON A DAILY BASIS AND THE SITE MUST BE LEFT IN A SAFE AND SANITARY CONDITION EACH DAY. THE UNIVERSITY WILL INSPECT JOBS ITES REGULARLY AND WILL FINE ANY CONTRACTOR FOUND TO BE IN VIOLATION OF THIS REQUIREMENT AN AMOUNT OF UP TO \$1,000 PER VIOLATION.
13. Contractor must provide all O&M manuals, as-built drawings, and training of USC personnel on new equipment, controls, etc. prior to Substantial Completion. Final payment will not be made until this is completed.
14. Tree protection fencing is required to protect existing trees and other landscape features to be preserved within a construction area. The limits of this fence will be evaluated for each situation with the consultant, USC Arborist and USC Project Manager. The tree protection fence shall be 5' high chain link fence unless otherwise approved by USC Project Manager. No entry or materials storage will be allowed inside the tree protection zone. A 4" layer of mulch shall be placed over the tree protection area to maintain moisture in the root zone.
15. Where it is necessary to cross walks, tree root zones (i.e. under canopy) or lawns the following measures shall be taken: For single loads up to 9,000 lbs., a ¾" minimum plywood base shall be placed over areas impacted. For single loads over 9,000 lbs., two layers of ¾" plywood is required.
16. For projects requiring heavy loads to cross walks tree root ones or lawns. A construction entry road consisting of 10' x 16' oak logging mates on 12" coarse, chipped, hardwood base. Mulch and logging mats shall be supplemented throughout the project to keep matting structurally functional.
17. Any damage to existing landscaping (including lawn areas) will be remediated before final payment is made.

(USC Arborist, Kevin Curtis, may be contacted at 777-0033, cell 315-0319)

**SE-355**  
**PERFORMANCE BOND**

**KNOW ALL MEN BY THESE PRESENTS**, that *(Insert full name or legal title and address of Contractor)*

Name: \_\_\_\_\_

Address: \_\_\_\_\_

hereinafter referred to as "Contractor", and *(Insert full name and address of principal place of business of Surety)*

Name: \_\_\_\_\_

Address: \_\_\_\_\_

hereinafter called the "surety", are jointly and severally held and firmly bound unto *(Insert full name and address of Agency)*

Name: University of South Carolina

Address: 743 Greene St

Columbia, SC 29208

hereinafter referred to as "Agency", or its successors or assigns, the sum of \_\_\_\_\_ (\$ \_\_\_\_\_), being the sum of the Bond to which payment to be well and truly made, the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, Contractor has by written agreement dated \_\_\_\_\_ entered into a contract with Agency to construct

State Project Name: WBS - Replace Roofing for East Ground Level Custodial and Facilities Supply Area

State Project Number: CP00405532

Brief Description of Awarded Work, as found on the SE-330 or SE-332, Bid Form: Replace the roof and other related improvements for the Custodial Supply room at Williams Brice Stadium. Scope of work includes required abatement.

in accordance with Drawings and Specifications prepared by *(Insert full name and address of A-E)*

Name: Jumper Carter Sease/Architects PA

Address: 412 Meeting Street

West Columbia, SC 29169

which agreement is by reference made a part hereof, and is hereinafter referred to as the Contract.

**IN WITNESS WHEREOF**, Surety and Contractor, intending to be legally bound hereby, subject to the terms stated herein, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent or representative.

**DATED this** \_\_\_\_\_ **day of** \_\_\_\_\_, **2** \_\_\_\_\_  
*(shall be no earlier than Date of Contract)*

**BOND NUMBER** \_\_\_\_\_

**CONTRACTOR**

**SURETY**

**By:** \_\_\_\_\_  
(Seal)

**By:** \_\_\_\_\_  
(Seal)

**Print Name:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_

**Print Title:** \_\_\_\_\_

**Print Title:** \_\_\_\_\_  
*(Attach Power of Attorney)*

**Witness:** \_\_\_\_\_

**Witness:** \_\_\_\_\_

*(Additional Signatures, if any, appear on attached page)*

**SE-355****PERFORMANCE BOND****NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT:**

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Agency for the full and faithful performance of the contract, which is incorporated herein by reference.
2. If the Contractor performs the contract, the Surety and the Contractor have no obligation under this Bond, except to participate in conferences as provided in paragraph 3.1.
3. The Surety's obligation under this Bond shall arise after:
  - 3.1 The Agency has notified the Contractor and the Surety at the address described in paragraph 10 below, that the Agency is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If the Agency, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive the Agency's right, if any, subsequently to declare a Contractor Default; or
  - 3.2 The Agency has declared a Contractor Default and formally terminated the Contractor's right to complete the Contract.
4. The Surety shall, within 15 days after receipt of notice of the Agency's declaration of a Contractor Default, and at the Surety's sole expense, take one of the following actions:
  - 4.1 Arrange for the Contractor, with consent of the Agency, to perform and complete the Contract; or
  - 4.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
  - 4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Agency for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by the Agency and the contractor selected with the Agency's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the Bonds issued on the Contract, and pay to the Agency the amount of damages as described in paragraph 7 in excess of the Balance of the Contract Sum incurred by the Agency resulting from the Contractor Default; or
  - 4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and:
    - 4.4.1 After investigation, determine the amount for which it may be liable to the Agency and, within 60 days of waiving its rights under this paragraph, tender payment thereof to the Agency; or
    - 4.4.2 Deny liability in whole or in part and notify the Agency, citing the reasons therefore.
5. Provided Surety has proceeded under paragraphs 4.1, 4.2, or 4.3, the Agency shall pay the Balance of the Contract Sum to either:
  - 5.1 Surety in accordance with the terms of the Contract; or
  - 5.2 Another contractor selected pursuant to paragraph 4.3 to perform the Contract.
  - 5.3 The balance of the Contract Sum due either the Surety or another contractor shall be reduced by the amount of damages as described in paragraph 7.
6. If the Surety does not proceed as provided in paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond 15 days after receipt of written notice from the Agency to the Surety demanding that the Surety perform its obligations under this Bond, and the Agency shall be entitled to enforce any remedy available to the Agency.
  - 6.1 If the Surety proceeds as provided in paragraph 4.4 and the Agency refuses the payment tendered or the Surety has denied liability, in whole or in part, then without further notice the Agency shall be entitled to enforce any remedy available to the Agency.
  - 6.2 Any dispute, suit, action or proceeding arising out of or relating to this Bond shall be governed by the Dispute Resolution process defined in the Contract Documents and the laws of the State of South Carolina.
7. After the Agency has terminated the Contractor's right to complete the Contract, and if the Surety elects to act under paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Agency shall be those of the Contractor under the Contract, and the responsibilities of the Agency to the Surety shall those of the Agency under the Contract. To a limit of the amount of this Bond, but subject to commitment by the Agency of the Balance of the Contract Sum to mitigation of costs and damages on the Contract, the Surety is obligated to the Agency without duplication for:
  - 7.1 The responsibilities of the Contractor for correction of defective Work and completion of the Contract; and
  - 7.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under paragraph 4; and
  - 7.3 Damages awarded pursuant to the Dispute Resolution Provisions of the Contract. Surety may join in any Dispute Resolution proceeding brought under the Contract and shall be bound by the results thereof; and
  - 7.4 Liquidated Damages, or if no Liquidated Damages are specified in the Contract, actual damages caused by delayed performance or non-performance of the Contractor.
8. The Surety shall not be liable to the Agency or others for obligations of the Contractor that are unrelated to the Contract, and the Balance of the Contract Sum shall not be reduced or set-off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Agency or its heirs, executors, administrators, or successors.
9. The Surety hereby waives notice of any change, including changes of time, to the contract or to related subcontracts, purchase orders and other obligations.
10. Notice to the Surety, the Agency or the Contractor shall be mailed or delivered to the address shown on the signature page.
11. Definitions
  - 11.1 Balance of the Contract Sum: The total amount payable by the Agency to the Contractor under the Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts to be received by the Agency in settlement of insurance or other Claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Contract.
  - 11.2 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform the Contract or otherwise to comply with the terms of the Contract.

SE-357

**LABOR & MATERIAL PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS, that *(Insert full name or legal title and address of Contractor)*

Name: \_\_\_\_\_

Address: \_\_\_\_\_

hereinafter referred to as "Contractor", and *(Insert full name and address of principal place of business of Surety)*

Name: \_\_\_\_\_

Address: \_\_\_\_\_

hereinafter called the "surety", are jointly and severally held and firmly bound unto *(Insert full name and address of Agency)*

Name: \_\_\_\_\_

Address: \_\_\_\_\_

hereinafter referred to as "Agency", or its successors or assigns, the sum of \_\_\_\_\_ (\$ \_\_\_\_\_), being the sum of the Bond to which payment to be well and truly made, the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, Contractor has by written agreement dated \_\_\_\_\_ entered into a contract with Agency to construct

State Project Name: WBS - Replace Roofing for East Ground Level Custodial and Facilities Supply Area

State Project Number: CP00405532

Brief Description of Awarded Work, as found on the SE-330 or SE-332, Bid Form: Replace the roof and other related improvements for the Custodial Supply room at Williams Brice Stadium. Scope of work includes required abatement.

in accordance with Drawings and Specifications prepared by *(Insert full name and address of A-E)*

Name: Jumper Carter Sease/Architects PA

Address: 412 Meeting Street

West Columbia, SC 29169

which agreement is by reference made a part hereof, and is hereinafter referred to as the Contract.

**IN WITNESS WHEREOF**, Surety and Contractor, intending to be legally bound hereby, subject to the terms stated herein, do each cause this Labor and Material Payment Bond to be duly executed on its behalf by its authorized officer, agent or representative.

**DATED this** \_\_\_\_\_ **day of** \_\_\_\_\_, **2** \_\_\_\_\_  
*(shall be no earlier than Date of Contract)*

**BOND NUMBER** \_\_\_\_\_

**CONTRACTOR**

**SURETY**

**By:** \_\_\_\_\_  
(Seal)

**By:** \_\_\_\_\_  
(Seal)

**Print Name:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_

**Print Title:** \_\_\_\_\_

**Print Title:** \_\_\_\_\_  
*(Attach Power of Attorney)*

**Witness:** \_\_\_\_\_

**Witness:** \_\_\_\_\_

*(Additional Signatures, if any, appear on attached page)*

**LABOR AND MATERIAL PAYMENT BOND****NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT:**

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Agency to pay for all labor, materials and equipment required for use in the performance of the Contract, which is incorporated herein by reference.
2. With respect to the Agency, this obligation shall be null and void if the Contractor:
  - 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants; and
  - 2.2 Defends, indemnifies and holds harmless the Agency from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Contract.
3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
4. With respect to Claimants, and subject to the provisions of Title 29, Chapter 5 and the provisions of §11-35-3030(2)(c) of the SC Code of Laws, as amended, the Surety's obligation under this Bond shall arise as follows:
  - 4.1 Every person who has furnished labor, material or rental equipment to the Contractor or its subcontractors for the work specified in the Contract, and who has not been paid in full therefore before the expiration of a period of ninety (90) days after the date on which the last of the labor was done or performed by him or material or rental equipment was furnished or supplied by him for which such claim is made, shall have the right to sue on the payment bond for the amount, or the balance thereof, unpaid at the time of institution of such suit and to prosecute such action for the sum or sums justly due him.
  - 4.2 A remote claimant shall have a right of action on the payment bond upon giving written notice by certified or registered mail to the Contractor within ninety (90) days from the date on which such person did or performed the last of the labor or furnished or supplied the last of the material or rental equipment upon which such claim is made.
  - 4.3 Every suit instituted upon a payment bond shall be brought in a court of competent jurisdiction for the county or circuit in which the construction contract was to be performed, but no such suit shall be commenced after the expiration of one year after the day on which the last of the labor was performed or material or rental equipment was supplied by the person bringing suit.
5. When the Claimant has satisfied the conditions of paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
  - 5.1 Send an answer to the Claimant, with a copy to the Agency, within sixty (60) days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
  - 5.2 Pay or arrange for payment of any undisputed amounts.
  - 5.3 The Surety's failure to discharge its obligations under this paragraph 5 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a claim. However, if the Surety fails to discharge its obligations under this paragraph 5, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs to recover any sums found to be due and owing to the Claimant.
6. Amounts owed by the Agency to the Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any Performance Bond. By the Contractor furnishing and the Agency accepting this Bond, they agree that all funds earned by the contractor in the performance of the Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Agency's prior right to use the funds for the completion of the Work.
7. The Surety shall not be liable to the Agency, Claimants or others for obligations of the Contractor that are unrelated to the Contract. The Agency shall not be liable for payment of any costs or expenses of any claimant under this bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
8. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.
9. Notice to the Surety, the Agency or the Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, the Agency or the contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
10. By the Contractor furnishing and the Agency accepting this Bond, they agree that this Bond has been furnished to comply with the statutory requirements of the South Carolina Code of Laws, as amended, and further, that any provision in this Bond conflicting with said statutory requirements shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.
11. Upon request of any person or entity appearing to be a potential beneficiary of this bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.
12. Any dispute, suit, action or proceeding arising out of or relating to this Bond shall be governed by the laws of the State of South Carolina.

**13. DEFINITIONS**

- 13.1 Claimant: An individual or entity having a direct contract with the Contractor or with a Subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of the Contractor and the Contractor's Subcontractors, and all other items for which a mechanic's lien might otherwise be asserted.
- 13.2 Remote Claimant: A person having a direct contractual relationship with a subcontractor of the Contractor or subcontractor, but no contractual relationship expressed or implied with the Contractor.
- 13.3 Contract: The agreement between the Agency and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

**SE-380**

**CHANGE ORDER NO.:** \_\_\_\_\_

**CHANGE ORDER TO CONSTRUCTION CONTRACT**

**AGENCY:** University of South Carolina

**PROJECT NAME:** WBS - Replace Roofing for East Ground Level Custodial and Facilities Supply Area

**PROJECT NUMBER:** CP00405532

**CONTRACTOR:** \_\_\_\_\_ **CONTRACT DATE:** \_\_\_\_\_

**This Contract is changed as follows:** *(Insert description of change in space provided below)*

**ADJUSTMENTS IN THE CONTRACT SUM:**

1. Original Contract Sum:		\$
2. Change in Contract Sum by previously approved Change Orders:		
3. Contract Sum prior to this Change Order		\$ 0.00
4. Amount of this Change Order:		
5. New Contract Sum, including this Change Order:		\$ 0.00

**ADJUSTMENTS IN THE CONTRACT TIME:**

1. Original Substantial Completion Date:		
2. Sum of previously approved increases and decreases in Days:		Days
3. Change in Days for this Change Order		Days
4. New Substantial Completion Date:		

**CONTRACTOR ACCEPTANCE:**

**BY:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
*(Signature of Representative)*

**Print Name:** \_\_\_\_\_

**ARCHITECT RECOMMENDATION FOR ACCEPTANCE:**

**BY:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
*(Signature of Representative)*

**Print Name:** \_\_\_\_\_

**AGENCY ACCEPTANCE AND CERTIFICATION:**

**BY:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
*(Signature of Representative)*

**Print Name:** \_\_\_\_\_

- Change is within Agency Construction Contract Change Order Certification of: \$ \_\_\_\_\_
- Change is not within Agency Construction Contract Change Order Certification of: \$ \_\_\_\_\_

**Office of the State Engineer Authorization for change exceeding Agency Construction Contract Change Order1234 Certification:**

**AUTHORIZED BY:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

*(OSE Project Manager)*

Project Name: WBS - Replace Roofing for East Ground Level Custodial and Facilities Supply Area  
Project Number: CP00405532  
University of South Carolina

CONTRACTOR'S ONE YEAR GUARANTEE

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

We \_\_\_\_\_ as General Contractor on the above named project do hereby guarantee that all work executed under the requirements of the Contract Documents shall be free from defects due to faulty materials and/or workmanship for the period of one (1) year from the date of acceptance of the work by the Owner and/or Architect/Engineer, and hereby agree to remedy defects due to faulty materials and/or workmanship, and pay for any damage resulting therefrom, at no cost to the Owner, provided however, that the following are excluded from this guarantee:

Defects or failures resulting from abuse by the Owner; damage caused by fire, tornado, hail, hurricane, acts of God, wars, riots, or civil commotion.

\_\_\_\_\_  
(Name of Contracting Firm)

\_\_\_\_\_  
\*By

\_\_\_\_\_  
Title

\*\* Must be executed by an officer of the Contracting Firm.

SWORN TO before me this \_\_\_\_\_ day of \_\_\_\_\_ 19 \_\_\_\_\_ (SEAL)  
\_\_\_\_\_(STATE)

My commission expires \_\_\_\_\_

ONE YEAR GUARANTEE FORM





### CAMPUS VEHICLE EXPECTATIONS

1. All motorized vehicles on the University campus are expected to travel and park on roadways and/or in parking stalls.
2. All motorized vehicle traffic on USC walkways must first receive the Landscape Manager's authorization. Violators may be subject to fines and penalties.
3. All motorized vehicles that leak or drip liquids are prohibited from traveling or parking on walks or landscaped areas.
4. Contractors, vendors, and delivery personnel are required to obtain prior to parking authorization before parking in a designated space. Violators may be subject to fines and/or penalties. See Item 10 below.
5. Drivers of equipment or motor vehicles that damage university hardscape or landscape will be held personally responsible for damages and restoration expense.
6. Vehicle drivers who park on landscape or drives must be able to produce written evidence of need or emergency requiring parking on same.
7. All vehicles parked on landscape, hardscape, or in the process of service delivery, must display adequate safety devices, i.e. flashing lights, cones, signage, etc.
8. All drivers of equipment and vehicles will be respectful of University landscape, equipment, structures, fixtures and signage.
9. All incidents of property damage will be reported to Parking Services or the Work Management Center.
10. Parking on campus is restricted to spaces designated by Parking Services at the beginning of the project. Once the project manager and contractor agree on how many spaces are needed, the project manager will obtain a placard for each vehicle. This placard must be hung from the mirror of the vehicle, otherwise a ticket will be issued and these tickets cannot be "fixed." Parking spaces are restricted to work vehicles only; no personal vehicles.



## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

### 1.2 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
- B. Related Sections include the following:
  - 1. Divisions 2 through 33 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

### 1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

### 1.4 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include the following:
  - 1. Primary operational systems and equipment.
  - 2. Air or smoke barriers.
  - 3. Electrical wiring systems.
- C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, which results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
  - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
  - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

- B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  4. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01 73 10



PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
  - 1. Demolition and removal of selected portions of a building or structure.
  - 2. Repair procedures for selective demolition operations.
- B. Related Sections include the following:
  - 1. Division 1 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
  - 2. Division 22 Sections for demolishing, cutting, patching, or relocating plumbing items.
  - 3. Division 23 Sections for demolishing, cutting, patching, or relocating mechanical items.
  - 4. Division 26 Sections for demolishing, cutting, patching, or relocating electrical items.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.



1.5 SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
- C. Schedule of Selective Demolition Activities: Indicate the following:
  - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's staff and students on-site operations are uninterrupted.
  - 2. Interruption of utility services.
  - 3. Coordination for shutoff, capping, and continuation of utility services.
  - 4. Locations of temporary partitions and means of egress.

1.6 QUALITY ASSURANCE

- A. Demolition Qualifications: Experienced personnel that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Pre-demolition Conference: Conduct conference at Project site during Project Pre-Construction Conference. Review methods and procedures related to selective demolition including, but not limited to, the following:
  - 1. Inspect and discuss condition of construction to be selectively demolished.
  - 2. Review structural load limitations of existing structure.
  - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

1.7 PROJECT CONDITIONS

- A. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
  - 1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- B. Owner assumes no responsibility for condition of areas to be selectively demolished.

1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Hazardous Materials: Hazardous materials will be encountered in the Work.
  1. Hazardous materials will be removed by the contractor before start of the Work.
  2. If other materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.
- D. Storage or sale of removed items or materials on-site will not be permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  1. Maintain fire-protection facilities in service during selective demolition operations.

## PART 2 - PRODUCTS

### 2.1 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
  1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  2. Use materials whose installed performance equals or surpasses that of existing materials.
- B. Comply with material and installation requirements specified in individual Specification Sections.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
  - 1. Provide at least 72 hours' notice to Owner if shutdown of service is required during changeover.
- C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
  - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
  - 2. Arrange to shut off indicated utilities with utility companies.
  - 3. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
  - 4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
- D. Utility Requirements: Refer to Division 22, 23 and 26 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

- A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
  - 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
  - 3. Protect existing site improvements, appurtenances, and landscaping to remain.
  - 4. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
- C. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
- D. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- E. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
- F. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

#### 3.4 POLLUTION CONTROLS

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
  2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  - 1. Proceed with selective demolition systematically, from higher to lower level.
  - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  - 5. Maintain adequate ventilation when using cutting torches.
  - 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  - 7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  - 8. Dispose of demolished items and materials promptly.
  - 9. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
- B. Existing Facilities: Comply with owner requirements for using and protecting walkways, building entries, and other building facilities during selective demolition operations.
- C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 PATCHING AND REPAIRS

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Patching: Comply with Division 1 Section "Cutting and Patching."
- C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
  - 1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.
- D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Burning: Burning of demolished materials will be permitted only at designated areas on Owner's property, providing required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.
- D. Disposal: Transport demolished materials and dispose of at designated spoil areas on Owner's property.
- E. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 01 73 20



## SECTION 02080 – ASBESTOS AND LEAD-BASED PAINT ABATEMENT

### PART 1 – GENERAL

#### 1.1 RELATED DOCUMENTS:

- A. Documents affecting work of this Section include, but are not necessarily limited to, abatement design drawing AB-1, the Asbestos-Containing Materials Investigation Report (dated August 8, 2014) and the Lead-Based Paint Investigation Report (dated August 8, 2014) prepared by F&ME Consultants located in the appendix of these specifications. Also, the USC Lead Management Plan is included in the appendix of these specifications.

#### 1.2 ABATEMENT CONTRACTOR QUALIFICATIONS:

##### A. Abatement Contractor's Qualifications:

1. A qualified firm that has not less than five (5) years' experience in the removal and proper disposal of asbestos-containing materials (ACM).
2. A qualified firm that has successfully completed the asbestos abatement on a minimum of three (3) projects over a period of five (5) years and where the scope of asbestos abatement work was over \$50,000.00.
3. A qualified firm that has not less than five (5) years experience in the removal (renovation/ demolition) and proper disposal of lead-coated building components.

#### 1.3 SCOPE OF WORK – SUMMARY

- A. The University of South Carolina (Owner) is planning to renovate and complete roof repairs to the Custodial Supply Area located in the East Ground level of Williams-Brice Stadium. Both asbestos-containing materials (ACM) and lead-coated materials (hereinafter LBP) will be impacted by the proposed renovations and will need to be removed prior to the start of renovation activities. For this reason, the scope of work for this abatement generally includes the removal and proper disposal of the ACM and LBP from within the limits of the abatement area as indicated on the provided drawing and referenced in these specifications.
- B. Abatement Contractor (Contractor) will be required to coordinate and communicate with the General Contractor (GC) for location of and access to materials to be abated, to include the scheduling for installation of scaffolding, if utilized, prior to the start of abatement activities associated with the project included herein. All OSHA safety guidelines and regulations relative to worker protection shall be followed during all abatement activities. If used, Contractor shall ensure that the scaffolding is thoroughly cleaned following abatement.
- C. Contractor is to be aware that in order to establish full containment, the construction of temporary barriers will be required to isolate the abatement areas. The construction of these barriers will require accessing the space above the ceiling joists for the renovation area. This area shall be accessed utilizing OSHA compliant means and methods.



- D. Prior to commencement of abatement activities, Contractor shall submit required documents as outlined in Section 1.18 herein.
- E. Contractor shall handle and dispose of all ACM and LBP utilizing work practices outlined by the OSHA's, SCDHEC's regulations and the USC Lead Management Plan.
- F. Contractor shall refer to the abatement plan AB-1 for locations and limits of abatement activities.
- G. Prior to establishing containment or performing abatement work, Contractor shall thoroughly clean areas where abatement activities are to occur as required herein.
- H. Abatement methods utilized during friable abatement activities shall require full containment, to include the establishment of negative pressure and the cutting and capping of all existing HVAC and electrical systems leading into the abatement work areas prior to start of wet removal activities.
- I. Contractor shall take into account emergency ingress and egress when completing his or her abatement work plan.
- J. In the event of a fiber release (airborne or amended water), Contractor will follow procedures as outlined in Section 3.2, part A of these specifications.
- K. The Contractor shall be responsible for verification of all site conditions and quantities associated with the abatement and removal tasks prior to the bid.
- L. Contractor's bid shall include all materials and labor necessary to remove, handle, transport and dispose of ACM and LBP within the work area and complete the abatement operations. ACM and LBP to be removed and/or impacted from the subject building structure during the abatement operations shall include the following:
  - 1. Friable ACM Abatement
    - a. ACM spray-applied texture and drywall ceilings in supply areas #1, #2, #3 and #4, and hallway associated with supply areas #2, #3 and #4. (Est. 600 S.F.)
    - b. ACM joint compound associated with drywall in supply area # 5 (Est. 150 S.F.)
    - c. ADD ALTERNATE 1 - As an alternate to the base bid Contractor shall include price for removal of ACM surfacing material from top portion of existing exterior masonry wall, for the length of the wall in this area (refer to drawing AB-1). Contractor is to remove these materials down to underlying masonry surface while under full containment. After abatement Contractor shall apply an approved encapsulant to the exposed surface.
  - 2. Lead Removal
    - a. Original wooden tongue-n-groove ceilings above existing textured drywall ceilings in supply areas #1, #2, #3 and #4, and hallway associated with supply areas #2, #3 and

#4. Also includes the exposed original wooden tongue-n-groove ceiling in supply area #5. (Est. 1,300 S.F.)

- b. Lead glazed wall tile in bathroom. (Est. 100 S.F.)
- c. LBP removal on steel columns in Supply areas #1, and #5 (Est.48 S.F)

#### 1.4 SCOPE OF WORK – ASBESTOS ABATEMENT ACTIVITIES

A. Contractor shall remove the following ACM from the Custodial Supply Area at Williams-Brice Stadium:

1. ACM spray-applied texture and associated drywall ceilings in supply areas #1, #2, #3 and #4, and hallway associated with supply areas #2, #3 and #4

The drywall ceilings in supply areas #1, #2, #3 and #4 and the hallway associated with supply areas #2, #3 and #4 have asbestos-containing spray-applied ceiling texture associated with them. Abatement of the friable ACM ceiling texture and associated drywall shall be performed under full negative air containment. Contractor shall include removal of any ACM spray-applied ceiling texture material that may be wedged between the existing walls. Contractor shall perform any necessary minor demolition to access and remove this material as part of this project.

Contractor is to be aware that temporary barrier walls will be required in order to establish and/ or maintain negative air conditions in this area. Construction of these barriers shall be in compliance with local, state and federal regulations. Contractor shall ensure that construction activities associated with these barriers will not disturb existing ACM. If during the construction of appropriate containment barriers ACM are disturbed, resulting in a release of fibers or ACM debris outside of containment, Contractor shall clean the contaminated area in accordance with these specifications and governing regulations.

2. ACM joint compound and associated drywall in supply area # 5

A portion of the east wall at the entrance in supply area # 5 has asbestos containing joint compound and associated drywall. Abatement of the friable ACM joint compound and the associated drywall shall be performed under full negative air containment.

#### 1.5 SCOPE OF WORK – LEAD REMOVAL

A. As a function of the renovation activities, Contractor shall remove the original wooden tongue-n-groove ceiling above existing textured drywall ceilings from supply areas #1, #2, #3, #4, and hallway associated with supply areas #2, #3, and # 4, as well as the exposed original wooden tongue-n-groove ceilings in supply room #5, and the lead-glazed wall tiles in the bathroom area at the back and sides of the original urinal.

- B. Contractor shall establish procedures for the removal of the LBP original wooden tongue-n-groove ceiling so as to minimize the generation of dust and exposure of workers to airborne concentrations of lead above the PEL. Contractor shall utilize means and methods that take in to account and meet all regulatory requirements for worker protection (OSHA) and disposal (SCDHEC).
- C. All LBP debris shall be removed, handled and disposed of properly as per governing regulations pertaining to lead-based paint disposal and the USC Facility Services Lead Management Plan. All dust and associated debris generated from the removal original wooden tongue-n-groove ceiling shall be contained to the areas of the renovation. Contractor is to provide containers for all waste generated during LBP abatement. Following removal, Contractor shall clean the surrounding surfaces to ensure that no lead dust remains, to include HEPA vacuuming and wet wiping of all surfaces.
- D. Saw cutting of the original wooden tongue-n-groove ceiling is prohibited, as is sanding, scraping, or the use of other abrasive techniques. All LBP waste and debris generated during this removal shall be properly containerized, transported and disposed of by Contractor. Contractor shall document and provide copies of all manifests for the disposal of all LBP waste.
- E. Contractor shall have the option of utilizing general mechanical means for demolition/ removal of the original wooden tongue-n-groove ceilings so long as the Contractor can provide a NEA that has been prepared within 12 months of start of the removal operations for those work practices. If a NEA cannot be provided, the Contractor shall follow procedures as shown in the USC Lead Management Plan. All procedures utilized shall meet the OSHA regulations for worker protection.
- F. Contractor shall have the option to remove the original wooden tongue-n-groove ceilings while under full containment during friable asbestos abatement activities so long as negative pressure is maintained. In addition, should this method be utilized all debris generated shall be removed handled and disposed of as ACM.
- G. Contractor shall ensure that workers performing the lead removal task or who are working in the area while the lead removal task is being performed have received and acknowledged receipt of, at a minimum, lead awareness training.
- H. As a function of the renovation activities, Contractor shall remove the lead-glazed wall tiles from the masonry block walls located in the bathroom above the ground level urinal in the bathroom at Williams-Brice stadium. These wall tiles are coated on the exposed side with a lead containing glazing. Contractor shall implement means, methods, and/ or containment measures for the removal of lead containing bricks (i.e., placement of polyethylene sheeting on ground surface below scaffolding, etc.) in a manner that will ensure that all debris generated during this work is captured and properly disposed of.
- I. Contractor shall establish procedures for the removal of lead glazed wall tile so as to minimize the generation of dust and exposure of workers to airborne concentrations of lead above the PEL. All dust and associated debris generated from the removal of lead-glazed wall tile shall be

contained to the areas of the renovation. Following removal, Contractor shall clean the surrounding surfaces to ensure that no lead dust remains, to include HEPA vacuuming and wet wiping of all surfaces.

- J. Saw cutting of the lead-glazed ceramic tile is prohibited, as is sanding, scraping, or the use of other abrasive techniques. Where necessary, cutting shall be performed in the mortar joints only. Contractor shall manually remove the tiles intact, with only minimal damage to the glazed surface of the tiles. All LBP waste and debris generated during this removal shall be properly containerized, transported and disposed of by Contractor. Contractor shall document and provide copies of all manifests for the disposal of all lead waste.
- K. As a function of the abatement activities, Contractor shall remove LBP from the top 3 feet of each of the columns located in Supply rooms #1 and # 5. These columns are coated with lead based paint. Contractor shall implement means, methods, and containment measures for the removal of lead based paint (i.e., placement of polyethylene sheeting on ground surface below scaffolding, etc.) in a manner that will ensure that all debris generated during this work is captured and properly disposed of.
- L. Contractor shall establish procedures for the removal of the LBP so as to minimize the generation of dust and exposure of workers to airborne concentrations of lead above the PEL. All dust and associated debris generated from the removal of lead-glazed wall tile shall be contained to the areas of the renovation. Following removal, Contractor shall clean the surrounding surfaces to ensure that no lead dust remains, to include HEPA vacuuming and wet wiping of all surfaces.
- M. Sanding, scraping, or the use of abrasive techniques of the LBP is prohibited. Contractor shall remove the LBP from the columns using non-abrasive methods. All LBP waste and debris generated during this removal shall be properly containerized, transported and disposed of by Contractor. Contractor shall document and provide copies of all manifests for the disposal of all lead waste.

#### 1.6 CONTRACTOR'S DUTIES – SUMMARY

- A. The Contractor is to provide and pay for the following, except as specifically noted:
  - 1. Labor, material, tools, required equipment (i.e. scaffolding, etc.) and machinery.
  - 2. Other facilities and services necessary for proper execution and completion of Work.
  - 3. Pay legally required sales, consumer and use taxes.
- B. Contractor will absorb costs for the following:
  - 1. Permits
  - 2. Government fees

3. Licenses

- C. Contractor shall provide notifications to appropriate entities based on applicable regulations.
- D. Contractor shall comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities which bear on performance of Work.
- E. Contractor shall enforce strict discipline and good order among employees. Do not employ on Work, on Project or Work Site:
  - 1. Unfit persons.
  - 2. Persons not skilled in assigned task.

1.7 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z9.2 (1979; R 1991) Fundamentals Governing the Design and Operation of Local Exhaust Systems

ANSI Z87.1 (1989; Errata; Z87.1a) Occupational and Educational Eye and Face Protection

ANSI Z88.2 (1992) Respiratory Protection

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 1368 (1990) Visual Inspection of Asbestos Abatement Projects

CODE OF FEDERAL REGULATIONS (CFR)

CFR 29 Part 1910 Occupational Safety and Health Standards

CFR 29 Part 1926 Safety and Health Regulations for Construction

CFR 40 Part 61 National Emission Standards for Hazardous Air Pollutants

CFR 40 Part 763 Asbestos

DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

R 61-86.1 (2011) Standards of Performance for Asbestos Projects

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 340/1-90-018 (1990) Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance

EPA 340/1-90-019 (1990) Asbestos/NESHAP Adequately Wet Guidance

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH Pub No. 84-100 (1984; Supple 1985, 1987, 1988 & 1990)

NIOSH Manual of Analytical Methods

UNDERWRITERS LABORATORIES (UL)

UL 586 (1990) High-Efficiency, Particulate, Air Filter Units

## 1.8 DEFINITIONS

### A. Adequately Wet

1. A term as defined in CFR 40 Part 61, Subpart M and EPA 340/1-90-019 that means to sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material (ACM), then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wetted.

### B. Aggressive Method

1. Removal or disturbance of building material by sanding, abrading, grinding, or other method that breaks, crumbles, or disintegrates intact ACM.

### C. Amended Water

1. Water containing a wetting agent or surfactant with a surface tension of at least 29 dynes per square centimeter when tested in accordance with ASTM D 1331.

### D. Asbestos

1. Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

### E. Asbestos-Containing Construction Material (OSHA):

1. Any manufactured construction material that contains more than one tenth of one percent asbestos by weight.

### F. Asbestos-Containing Material (ACM)

1. Any material containing more than one percent asbestos

### G. Asbestos Regulated Work Area

1. An asbestos regulated work area is an area established by the Contractor to demarcate areas where Class I, II and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne

concentrations of asbestos exceed or there is a reasonable possibility they may exceed the permissible exposure limit.

H. Authorized Person

1. Any person certified and authorized by the Contractor, Owners Representative and/or Owner and required by work duties to be present in regulated areas.

I. Category I Non-friable ACM

1. A term as defined in CFR 40 Part 61, Subpart M and EPA 340/1-90-018 that means asbestos-containing packing, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in CFR 40 Part 763, Appendix A, Subpart F, Section 1, Polarized Light Microscopy.

J. Category II Non-friable ACM

1. A term as defined in CFR 40 Part 61, Subpart M and EPA 340/1-90-018 that means any material, excluding Category I Non-friable ACM, containing more than 1 percent asbestos as determined using the methods specified in Appendix A, Subpart F, CFR 40 Part 763, Section 1, Polarized Light Microscopy, that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

K. Class I Asbestos Work

1. Activities that involve the removal of thermal system insulation (TSI) and surfacing ACM.

L. Class II Asbestos Work

1. Abatement activities involving the removal of ACM, which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic.

M. Class 2 Landfill

1. Landfill that accepts construction and demolition debris, to include lead-based paint waste generated from commercial facilities.

N. Competent Person

1. In addition to the definition in CFR 29 1926.32 (f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures to eliminate them.

O. Critical Barrier

1. One or more layers of 6-mil plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.

P. Disturbance

1. Contact, which releases fibers from ACM or debris containing ACM. This term includes activities that disrupt the matrix of ACM, render ACM friable, or generate visible debris. Disturbance includes cutting away small amounts of ACM no greater than the amount that can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.

Q. Friable ACM

1. A term as defined in CFR 40 Part 61, Subpart M and EPA 340/1-90-018 that means any material containing more than 1 percent asbestos as determined using the method specified in CFR 40 Part 763, Appendix A, Subpart F, Section 1, Polarized Light Microscopy, that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent as determined by a method other than point counting by polarized light microscopy (PLM), verify the asbestos content by point counting using PLM.

R. Hazardous Waste

1. Generation and disposal of hazardous waste is regulated under the Resource Conservation and Recovery Act (RCRA). If a waste exhibits toxicity, corrosivity, ignitability, or reactivity characteristics it is considered hazardous.

S. Intact

1. ACM which has not crumbled, been pulverized, or otherwise deteriorated so that it is no longer likely to be bound with its matrix.

T. Lead-based Paint Waste

1. Material such as wood, brick and metal that is painted with lead-based paint.

U. Lead-based Paint Residue

1. Residue that is generated from the removal (i.e., scraped, chipped, sandblasted or chemical) of lead-based paint from a structure.

V. Negative Initial Exposure Assessment



1. A demonstration by the Contractor that employee exposure during an operation is expected to be consistently below the PELs (TWA and Excursion Limit).

W. Time-Weighted Average (TWA)

1. The TWA is an 8-hour time weighted average of airborne concentration of fibers (longer than 5 micrometers) per cubic centimeter of air which represents the employee's 8-hour workday as determined by Appendix A of CFR 29 Part 1926, Section 1926.58.

1.9 DESCRIPTION OF WORK

- A. The work covered by this section includes the requirements for the removal, transportation, disposal, storage, containment of, and housekeeping activities involving asbestos containing materials, asbestos contaminated materials, and lead-containing materials located in the Custodial Supply Area of Williams-Brice Stadium. CFR 40 Part 763 governs this abatement work.

1.10 SECURITY

- A. Security shall be provided for each asbestos regulated work area. A logbook shall be kept documenting entry into and out of the asbestos regulated work area. Entry into asbestos regulated work areas shall only be by personnel authorized by the Contractor, Owner's Representative and Owner. Personnel authorized to enter asbestos regulated work areas shall be trained, medically evaluated and wear the personal protective equipment, as required by this specification, for the specific asbestos regulated work area to be entered.

1.11 MEDICAL REQUIREMENTS

- A. Medical requirements shall conform to CFR 29 Part 1926, Section 1926.58.

1. Medical Examinations

- a. The Contractor shall provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an 8 hour time weighted average. In the absence of specific airborne fiber data provide medical examination for all workers who will enter the work area for any reason. Examination shall as a minimum meet OSHA requirements as set forth in 29 CFR 1926.1101(m) and, in addition, provide an evaluation of the individuals' ability to work in environments capable of producing heat stress in the worker.

2. Medical and Exposure Records

- a. The Contractor shall maintain complete and accurate records of employees' medical examinations for a period of 30 years after termination of employment as required by 29 CFR 1926.1101(n) and make records of the required medical examinations available for inspection and copying to: The Assistant Secretary for Occupational Safety and Health, The Director of The National Institute for Occupational Safety and Health (NIOSH), authorized representatives of either of them, and an employee's physician upon the request of the employee or former employee.

#### 1.12 TRAINING

- A. All Contractor personnel involved with asbestos and lead-based paint work must be trained and tested prior to any work, and shall be thoroughly familiar with the Contractor's standard operating procedure for the abatement work. All personnel shall undergo the specific medical examinations required by OSHA. The superintendent and the foreman shall be thoroughly familiar with all applicable regulations and practices for asbestos work and shall have participated in at least two (2) abatement projects of similar size and scope within the past two (2) years. All personnel shall be in possession of valid respirator fit test paperwork.

#### 1.13 RESPIRATORY PROTECTION PROGRAM

- A. The Contractor shall establish in writing, and implement a respiratory protection program in accordance with CFR 29 Part 1926, Section 1926.58, CFR 29 Part 1910, Section 1910.134, ANSI Z88.2, CGA G-7 and CGA G-7.1. The Contractor shall establish minimum respiratory protection requirements based on measured or anticipated levels of airborne asbestos fiber concentrations encountered during the performance of the asbestos abatement work. The Contractor's respiratory protection program shall include, but not be limited to, the following elements:

1. The company policy, used for the assignment of individual responsibility, accountability, and implementation of the respiratory protection program.
2. The standard operating procedures covering the selection and use of respirators. Respiratory selection shall be determined by the hazard to which the worker is exposed.
3. Medical evaluation of each user to verify that the worker may be assigned to an activity where respiratory protection is required.
4. Training in the proper use and limitations of respirators.
5. Respirator fit testing (i.e., quantitative, qualitative and individual functional fit checks).
6. Regular cleaning and disinfection of respirators.
7. Routine inspection of respirators during cleaning and after each use when designated for emergency use.
8. Storage of respirators in convenient, clean, and sanitary locations.
9. Surveillance of work area conditions and degree of employee exposure (e.g., through air monitoring).
10. Regular evaluation of the continued effectiveness of the respiratory protection program.

11. Recognition and procedures for the resolution of special problems as they affect respirator use (e.g., no facial hair that comes between the respirator face piece and face or interferes with valve function; prescription eyewear usage; prohibition of wearing contact lenses; etc.).

12. Proper training in putting on and removing respirators.

1.14 HAZARD COMMUNICATION PROGRAM

A. A hazard communication program shall be established and implemented in accordance with CFR 29 Part 1926, Section 1926.59.

1.15 SAFETY AND HEALTH COMPLIANCE

A. In addition to detailed requirements of this specification, the work shall comply with applicable laws, ordinances, criteria, rules, and regulations of Federal, state, regional, and local authorities regarding handling, storing, transporting, and disposing of asbestos and lead-containing waste materials and with the applicable requirements of CFR 29 Part 1910, CFR 29 Part 1926, CFR 40 Part 61, Subpart A, and CFR 40 Part 61, Subpart M, NFPA 10, NFPA 70, NFPA 90A, NFPA 101. Matters of interpretation of standards shall be submitted to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, rules, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirement as defined by the Owner shall apply.

1.16 COMPETENT PERSON

A. When the contractor has employees engaged in Class I or II asbestos work, he shall have a Competent Person performing or supervising the following duties, as applicable:

1. Set up the regulated area, enclosure, or other containment;
2. Ensure (by on-site inspection) the integrity of the enclosure or containment;
3. Set up procedures to control entry to and exit from the enclosure and/or area;
4. Supervise all employee exposure monitoring and ensure that it is conducted as required;
5. Ensure that employees working within the enclosure and/or using glove bags wear protective clothing and respirators as required.
6. Ensure through on-site supervision that employees set up and remove engineering controls, use work practices and personal protective equipment in compliance within all requirements;
7. Ensure that employees use the hygiene facilities and observe the decontamination procedures specified;

8. Ensure through on-site inspections that engineering controls are functioning properly and employees are using proper work practices; and,
9. Ensure notification of other employees on site.

#### 1.17 PERMITS, LICENSES AND NOTIFICATIONS

- A. The Contractor shall obtain all necessary permits and licenses in conjunction with the project asbestos abatement, transportation and disposal actions and timely notification furnished of such actions required by Federal, state, regional, and local authorities and as otherwise specified herein. The Contractor shall notify the SCDHEC and the Owner in writing at least 10 days prior to the commencement of work in accordance with CFR 40 Part 61, Subpart M, state and local requirements to include the mandatory "Notification of Demolition and Renovation Record" form and other required notification documents. Notification shall be by Certified Mail - Return Receipt Requested. The Contractor shall furnish copies of the receipts to the Owner prior to the commencement of work.
- B. The Contractor shall notify the Owner if any of the following occur:
  1. If the Contractor or any of its subcontractors are served with notice of violation of any law, regulation, permit or license which relates to this Contract.
  2. Proceedings are commenced which could lead to revocation of related permits or licenses.
  3. Permits, licenses or other Owner authorizations relating to this Contract are revoked.
  4. Litigation is commenced which would affect this Contract.
  5. If the Contractor or any of its Subcontractors become aware that its equipment or facilities are not in compliance or may fail to comply in the future with applicable laws or regulations.

#### 1.18 SUBMITTALS

- A. The following shall be submitted to the Owner and/or the Owner's Representative prior to the start of abatement operations:
  1. Manufacturer's catalog data for all materials and equipment to be used in the work, including brand name, model, capacity, performance characteristics and any other pertinent information.
  2. Abatement Work Plan
    - a. A written work plan outlining the project sequencing, methods, etc. must be accepted in writing by the Owners' Representative prior to start of any site work.
  3. Safety Plan

- a. A written safety plan and comprehensive site-specific accident prevention plan prior to start of work. This plan must be accepted in writing by the Owners' Representative prior to start of any site work.

4. Initial Exposure Assessment

- a. The Contractor shall ensure that a "competent person" conducts an exposure assessment immediately before or at the initiation of all operations to determine expected exposures. The assessment must be based on the competent person's review of all aspects of the Contractor's performance doing similar jobs. Only if similar controls are used and the work supervised by the same or similarly trained personnel, may past data be relied on. The assessment shall include consideration of all observations, information or calculations that indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the operations of the Contractor that indicate the levels of airborne asbestos likely to be encountered on the job. However, the assessment may conclude that exposures are likely to be consistently below the PELs only as a conclusion of a "negative exposure assessment". The Contractor shall monitor employees at the beginning of the project. The exposure assessment shall be updated to reflect actual conditions based on the results of exposure monitoring.

5. Employee Training and Certification of Worker Acknowledgement

The following training documentation for each employee to be engaged in the abatement work:

- a. Copy of certification of accreditation for completion of "workers" course (for workers) or "Contractor/Supervisor" Course (for Contractors and onsite supervisory staff) meeting the requirements of EPA's CFR 40 Part 763 or more stringent state criteria, and all subsequent annual refresher training certificates meeting same requirements.
- b. A copy of a Contractor generated form entitled Certificate of Workers Acknowledgment shall be completed for each employee.
- c. Signatures of all workers performing lead removal tasks certifying that they have received, at a minimum, lead awareness training.

6. Encapsulant

- a. A certificate stating that the selected encapsulant meets the applicable specified performance requirements.

7. Negative Exposure Assessment

- a. The Contractor may demonstrate that employee exposures will be below the PELs for asbestos and/ or lead by data, which conform to the following criteria:
  - i. Objective data demonstrating that the product or material containing asbestos minerals or lead dust or the activity involving such product or material cannot release airborne fibers or lead dust in concentrations exceeding the TWA and

excursion limit under those work conditions having the greatest potential for releasing asbestos or lead dust; or

- ii. Where the Contractor has monitored prior asbestos jobs for the PEL and the excursion limit within 12 months of the current or projected job, the monitoring and analysis were performed in compliance with CFR 29 Part 1926.1101; and the data were obtained during work operations conducted under workplace conditions “closely resembling” the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor’s current operations, the operations were conducted by employees whose training and experience were no more extensive than that of employees performing the current job, and these data show that under the conditions prevailing and which will prevail in the current workplace there is a high degree of certainty that employee exposures will not exceed the TWA and excursion limit; or
- iii. The results of initial exposure monitoring of the current job made from breathing zone samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee covering the operations that are most likely during the performance of the entire asbestos and lead abatement job to result in exposures over the PELs.

#### 8. Notifications

- a. The Owner shall be notified in writing 10 days prior to the start of asbestos work. A copy of the written notification shall be provided to any rental company concerning the intended use of rental equipment and the possibility of asbestos contamination, the decontamination procedures that will be used prior to the return of the equipment. A copy of the rental company’s written acknowledgment and agreement shall be included in the submittal.

#### 9. Certificates

- a. Vacuum, Filtration and Ventilation Equipment
  - b. Manufacturer’s certifications showing compliance with ANSI Z9.2 for:
    - i. Vacuums
    - ii. Water filtration equipment
    - iii. Ventilation equipment
    - iv. Other equipment required for containing airborne asbestos fibers.

#### 10. Records

- a. Respirator Program
  - i. Records of the respirator program as required by ANSI Z88.2, CFR 29 Part 1910, Section 1910.134, CFR 29 Part 1926, Section 1926.58.

- B. The following shall be submitted to the Owner and/or the Owner's Representative following completion of abatement operations:
1. Air Sampling Results
    - a. Area Air Sampling (supplied by the Owner) and Personnel Air Sampling (provided by the Contractor). Air sample fiber counting shall be completed and results provided within 24 hours after completion of a sampling period. The Owner shall be notified immediately of any airborne levels of asbestos fibers in excess of established requirements. Written sampling results shall be provided within 5 working days of the date of collection. The air sampling results shall be documented on a daily air-monitoring log.
  2. Pressure Differential Recordings
    - a. Pressure differential recordings shall be provided daily on the same day collected. The Contractor's competent person shall review the readings prior to being submitted. The Owner shall be notified immediately of any variance in the pressure differential which could cause adjacent unsealed areas to have asbestos fiber concentrations in excess of 0.005 fibers per cubic centimeter (f/cc) or background, whichever is higher.
  3. Asbestos Waste Shipment
    - a. Final completed copies of the Waste Shipment Record for all shipments of waste material as specified in CFR 40 Part 61, Subpart M and other required state waste manifest shipment records as specified herein. Detailed information of all asbestos waste disposals on the "MANDATORY WASTE SHIPMENT RECORD" form in accordance with revised CFR 40 Part 61, Subpart M. Such completed forms signed and dated by the agent of the landfill shall be submitted within 3 days after date of delivery of ACM to the landfill.

#### 1.19 PERSONAL PROTECTIVE EQUIPMENT

##### A. Respirators

Respiratory protection shall be worn by all individuals inside the work area from the initiation of the asbestos project until all areas have successfully passed clearance air monitoring:

1. Respirator Selection:
  - a. Where respirators are used, the Contractor shall select and provide, at no cost to the employee, the appropriate respirator, and shall ensure that the employee uses the respirator provided.
  - b. The Contractor shall select respirators from among those jointly approved as being acceptable for protection by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR 11.
  - c. The Contractor shall provide a tight fitting powered, air-purifying respirator in lieu of any negative-pressure respirator specified whenever:

- i. An employee chooses to use this type of respirator, and
- ii. This respirator will provide adequate protection to the employee.

B. Respirator Program:

1. Where respiratory protection is used, the Contractor shall institute a respirator program in accordance with CFR 29 Part 1910.134. The Contractor shall permit each employee who uses a filter respirator to change the filter elements whenever an increase in breathing resistance is detected and shall maintain an adequate supply of filter elements for this purpose.
2. Employees who wear respirators shall be permitted to leave work areas to wash their faces and respirator face pieces whenever necessary to prevent skin irritation associated with respirator use.

C. Respirator Fit Testing

1. The Contractor shall ensure that the respirator issued to the employee exhibits the least possible face piece leakage and that the respirator is fitted properly. The Contractor shall perform either quantitative or qualitative face fit tests at the time of initial fitting and at least every 6 months thereafter for each employee wearing a negative-pressure respirator. The qualitative fit tests may be used only for testing the fit of half-mask respirators where they are permitted to be worn or of full-face piece air purifying respirators where they are worn at levels at which half-face piece air purifying respirators are permitted. A qualitative or quantitative fit test conforming to CFR 29 Part 1926, Appendix C shall be conducted by the Contractor for each Contractor worker required to wear a respirator, and for the Owner and authorized visitors who enter an asbestos regulated work area where respirators are required to be worn.

D. Whole Body Protection

1. Personnel exposed to asbestos shall be provided with whole body protection, as specified herein and such protection shall be worn properly. The Contractor and competent person supervisor shall select and approve the whole body protection to be used. The competent person shall examine work suits worn by employees at least once per work shift for rips or tears that may occur during performance of work. When rips or tears are detected while an employee is working, rips and tears shall be immediately mended, or the work suit shall be immediately replaced. Disposable whole body protection shall be disposed of as asbestos contaminated waste upon exiting from the asbestos regulated work area. Reusable whole body protection worn shall be either disposed of as asbestos contaminated waste upon exiting from the asbestos regulated work area or be properly laundered in accordance with CFR 29 Part 1926 and as specified in the Contractor's Asbestos Hazard Abatement Plan. A worker shall not remove asbestos abatement whole body protection from the work site to be cleaned.



2. Disposable-impermeable coveralls with a zipper front shall be provided. Sleeves shall be secured at the wrists, and foot coverings secured at the ankles.
3. Gloves shall be provided to protect hands. Cloth gloves may be worn inside the plastic or rubber gloves for comfort, but shall not be used alone. Where there is the potential for hand injuries (i.e., scrapes, punctures, cuts, etc.) an appropriate glove shall be provided and used.
4. An additional coverall similar to that required in paragraph Coveralls shall be provided when the abatement and control method employed does not provide for the exit from the asbestos regulated work area directly into an attached decontamination unit. Cloth work clothes shall be provided for wear under the protective coverall and foot coverings when work is being conducted in low temperature conditions. Cloth work clothes shall be either disposed of as asbestos contaminated material or properly laundered in accordance with CFR 29 Part 1926 and as specified in the Contractor's Asbestos Hazard Abatement Plan.
5. Cloth socks shall be provided and worn next to the skin. If rubber boots are not used, footwear and disposable foot coverings shall be provided. Rubber boots shall be used in moist or wet areas. Only rubber boots shall be removed from the asbestos regulated work area after being thoroughly decontaminated. All other protective foot covering shall be disposed of as ACM.
6. Hood type disposable head covering shall be provided. In addition, protective headgear (hard hats) shall be provided as required. Hard hats shall only be removed from the asbestos regulated work area after being thoroughly decontaminated.
7. Contact lenses shall not be worn in asbestos regulated work areas. When vision correction is necessary to perform the work task, prescription safety eyewear shall be used. Personnel engaged in asbestos abatement activities in the asbestos regulated work area shall wear fog-proof goggles when the use of a full face-piece respirator is not required. Eye protection provided shall be in accordance with ANSI Z87.1.
8. All other items of whole body protection shall be provided as required and approved by the Contractor.

#### 1.20 DECONTAMINATION UNIT AND LOAD OUT UNIT

- A. Contractor shall take into account emergency egress issues related to the entire building when completing his abatement work plan. Decontamination and load out units will be sized, constructed and located so as to not impede ingress and egress to and from other portions of the building where abatement is not occurring.
- B. Decontamination and load out units shall be the sized, constructed and located so as to not impede the access to ACM to be abated. If access to ACM above the decontamination and load out units require abatement personnel to utilize them to gain access (i.e. get on top of the units) to the ACM, they shall be constructed meeting all OSHA safety guidelines.

- C. Provide each work area with separate personnel decontamination unit and equipment load out unit. Ensure that the decontamination unit is the only means of ingress and egress for the work area and that all equipment, bagged waste material and other material exit the work area only through the decontamination unit and equipment load out unit.
- D. All persons entering and exiting the work area will follow the entry and exit procedures required by the applicable regulations and these specifications. Process all equipment and material exiting the work area through the decontamination unit and equipment load out unit and decontaminate as required by the specifications.
- E. Construct walls and ceilings of decontamination unit and equipment load out unit airtight with at least 6 mil polyethylene sheeting and attach to existing building components or to a temporary framework. The decontamination unit and equipment load out unit may be combined if the size of the work area will not permit both.
- F. Use a minimum of two layers of 6-mil opaque polyethylene to cover floor under decontamination unit. Construct doors from overlapping polyethylene sheets so that they overlap adjacent surfaces. Weight sheets at bottom so that they quickly close after release. Put arrows on sheets showing direction of overlap and travel.
- G. Provide temporary water service connection to the decontamination unit and equipment load out unit. Provide backflow protection at the point of connection to the Owner's system.
- H. Water supply must be properly pressured and temperature balanced at shower discharge.
- I. Provide adequate temporary electric power with ground fault protection and overhead wiring throughout the decontamination unit and equipment load out unit. Provide a sub-panel for all temporary power in changing room.
- J. Provide a decontamination unit consisting of serial arrangement of clean room, showers room and equipment room. Provide adequately sized decontamination unit to accommodate the number of employees scheduled for the project. The center chamber of the three chamber decontamination unit will be fitted with as many portable walk through shower stalls as necessary so that all employees will be able to go through the entire decontamination procedure within 15 minutes. Construct decontamination unit of opaque or colored polyethylene for privacy. Construct decontamination unit so that it will not allow for parallel routes of exit without showering

#### 1.21 WARNING SIGNS AND TAPE

- A. Contractor shall ensure that all personnel understand the warning signs. Warning signs and tape printed in English and Spanish shall be provided at the regulated boundaries and entrances to asbestos regulated work areas. Signs shall be located at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Warning signs shall be in vertical format conforming to CFR 29 Part 1910, and CFR 29 Part 1926, minimum 500 by 360 mm 20 by 14 inches and displaying the following legend in the lower panel:

B. Legend Lettering

1. Danger 3-inch Sans Serif Gothic or Block
2. Asbestos 1-inch Sans Serif Gothic or Block
3. Cancer and Lung Disease Hazard 1-inch Sans Serif Gothic or Block
4. Authorized Personnel Only 1-inch Sans Serif Gothic or Block
5. Authorized Personnel Only 1-inch Gothic
6. Respirators and Protective Clothing are required in this Area 1-inch Gothic
7. Spacing between lines shall be at least equal to the height of the upper of any two lines. Warning tape shall be provided

1.22 WARNING LABELS

- A. Warning labels shall be affixed to all asbestos disposal containers used to contain asbestos materials, scrap, waste debris, and other products contaminated with asbestos. Containers with preprinted warning labels conforming to requirements specified herein are acceptable. Warning labels shall conform to CFR 29 Part 1926 and shall be of sufficient size to be clearly legible displaying the following legend:

DANGER  
CONTAINS ASBESTOS FIBERS  
AVOID CREATING DUST  
CANCER AND LUNG DISEASE  
HAZARD

1.23 LOCAL EXHAUST SYSTEM

- A. A local exhaust system shall be provided in the asbestos regulated work area in accordance with ANSI Z9.2 and CFR 29 Part 1926. The system will provide at least 4 air changes per hour inside of the containment. The local exhaust system shall be operated 24 hours per day, until the asbestos regulated containment area is removed and shall be leak proof to the filter and equipped with HEPA filters. Local exhaust equipment shall be sufficient to maintain a minimum pressure differential of minus 0.51 mm (0.02 inch) 0.02 inch of water column relative to adjacent, unsealed areas. Pressure differential shall be monitored continuously, 24 hours per day, with an automatic recording instrument. In no case shall the building ventilation system be used as the local exhaust system for the asbestos regulated work area. Filters on local exhaust system equipment shall conform to ANSI Z9.2 and UL 586. Filter shall be UL labeled. The local exhaust system shall terminate out of doors. All filters used shall be new at the beginning of the project and shall be periodically changed as necessary and disposed of as ACM waste.

- B. Prior to the start of the abatement the Contractor shall inspect all negative air machines and insure that all gaskets are in place, that all HEPA filters in the units are properly seated and mechanical brackets that secure the HEPA filters are intact. This inspection will be conducted in conjunction with the Owners Representative prior to the start of abatement activities. All deficiencies associated with the negative air machines shall be repaired prior to the start of the abatement. All defective units shall be removed and replaced.

#### 1.24 TOOLS

- A. Vacuums shall be leak proof to the filter, equipped with HEPA filters, be of sufficient capacity and provide the necessary capture velocity at the nozzle or nozzle attachment to efficiently collect, transport and retain the ACM waste material. Power tools shall not be used to remove ACM unless the tool is equipped with effective, integral HEPA filtered exhaust ventilation capture and collection system or has otherwise been approved for use by the Owner. All residual asbestos shall be removed from reusable tools prior to storage and reuse. Reusable tools shall be thoroughly decontaminated prior to being removed from asbestos regulated work areas.

#### 1.25 RENTAL EQUIPMENT

- A. If rental equipment is to be used, written notification shall be provided to the rental agency, concerning the intended use of the equipment, the possibility of asbestos contamination of the equipment and the steps that will be taken to decontaminate such equipment. A written acceptance of the terms of the Contractor's notification shall be obtained from the rental agency.

#### 1.26 PERSONNEL AIR MONITORING EQUIPMENT (CONTRACTOR PROVIDED)

- A. The Contractor is responsible for all personnel sampling as outlined in Section 3.12 herein, and shall select and approve the air monitoring equipment to be provided and used by the Contractor for evaluation of personnel exposure levels to airborne asbestos fiber concentrations within the work area. The equipment shall include, but not be limited to:
  - 1. Low-volume, battery powered, body-attachable, portable personal pumps that can be calibrated to a constant airflow up to approximately 3.5 liters per minute when equipped with a sampling train of tubing and filter cassette, and a self-contained rechargeable power pack capable of sustaining the calibrated flow rate for a minimum of 10 hours. The pumps shall also be equipped with an automatic flow control unit, which shall maintain a constant flow even as filter resistance increases due to accumulation of fiber and debris on the filter surface,
  - 2. Standard 25 millimeter diameter, 0.8 micrometer micron pore size, mixed cellulose ester membrane filters and cassettes with nonconductive barrels and shrink bands, to be used with low flow pumps in accordance with CFR 29 Part 1926, for personal air sampling,

3. Standard 25 millimeter diameter, 0.45 micrometer micron pore size, mixed cellulose ester membrane filters and cassettes with non-conductive barrels and shrink bands, to be used with high flow pumps when conducting environmental area sampling using NIOSH Pub No. 84-100 Methods 7400 and 7402 and the transmission electric microscopy method specified at CFR 40 Part 763,
4. Appropriate plastic tubing to connect the air sampling pump to the selected filter cassette,
5. A flow calibrator capable of calibration to within plus or minus 2 percent of reading over a temperature range of minus 4 degrees Fahrenheit to plus 140 degrees Fahrenheit and traceable to a National Institute for Standards and Technology (NIST) primary standard.

1.27 EXPENDABLE SUPPLIES

A. Duct Tape

1. Industrial grade duct tape shall be provided in 2 inch and 3 inch widths and shall be suitable for bonding sheet plastic and disposal containers specified herein.

B. Disposal Containers

1. Leak-tight disposal containers shall be provided for ACM generated as specified herein. Leak-tight means neither solids, liquids or dust can escape or spill out. All disposal containers shall be either pre-labeled or affixed with OSHA warning label as specified in CFR 29 Part 1926.

C. Disposal Bags

1. 6-mil thick leak-tight pre-labeled (OSHA warning label) bags shall be provided for placement of asbestos generated waste.

D. Leak-tight Wrapping

1. Two layers of 6-mil (minimum) thick polyethylene sheeting stock shall be used for the containment of removed asbestos-containing components or materials such as reactor vessels, large tanks, boilers, insulated pipe segments and other materials too large to be placed in disposal bags. Upon placement of the ACM component or material, each layer shall be individually leak-tight sealed with duct tape.

E. Fiberboard Drums

1. Fiberboard drums shall be provided if required by state or local requirements.

F. Cardboard Boxes

1. Heavy-duty corrugated cardboard boxes coated with plastic or wax to retard deterioration from moisture shall be provided if required by state and local requirements. Boxes shall fit into selected ACM disposal bags. Filled boxes shall be sealed leak-tight with duct tape.

G. Sheet Plastic

1. Sheet plastic shall be provided as specified herein and in the largest sheet size necessary to minimize seams, as indicated on the project drawings.

H. Polyethylene Sheet – General

1. 6-mil (minimum) thick polyethylene sheeting shall be clear, frosted and/or black and conform to ASTM D 4397.

I. Polyethylene Sheet – Flame Resistant

1. Where a potential for fire exists, 6-mil (minimum) thick flame-resistant polyethylene sheet shall be provided. Flame-resistant polyethylene film shall be frosted and/or black and shall conform to the requirements of NFPA 701.

J. Polyethylene Sheet-Reinforced

1. 6-mil thick reinforced polyethylene sheet shall be provided where high skin strength is required such as where it constitutes the only barrier between the asbestos regulated work area and the outdoor environment. The sheet stock shall consist of translucent, nylon-reinforced or woven-polyethylene thread laminated between two layers of polyethylene film. Film shall meet flame resistant standards of NFPA 701.

K. Viewing Inspection Window

1. Where feasible, a minimum of one clear 1/8-inch thick acrylic sheet, 18 inches by 24 inches, shall be installed as a viewing inspection window at eye level on a wall in each containment enclosure. All such windows shall be sealed leak-tight with industrial grade duct tape.

L. Wetting Agents

1. Amended water shall meet the requirements of ASTM D 1331.

M. Removal Encapsulant

1. Removal encapsulant (a penetrating encapsulant) shall be provided when conducting removal abatement activities that require a longer removal time or are subject to rapid evaporation of amended water. The removal encapsulant shall be capable of wetting the ACM and retarding fiber release during disturbance of the ACM equal to or greater than provided by amended water

N. Strippable Coating

1. Strippable coating found in aerosol cans, will be used to adhere to surfaces and to be removed cleanly by stripping at the completion of work. Since these coatings have a hydrocarbon-carrying agent, its use shall be confined to well-ventilated areas only.

1.28 MATERIAL SAFETY DATA SHEETS

- A. Material safety data sheets (MSDS) shall be provided for all hazardous materials brought onto the work-site. One copy shall be provided to the Owner's Representative on-site and one copy shall be included in the Contractor's Hazard Communication Program.

1.29 OTHER ITEMS

- A. A sufficient quantity of other items shall be provided that may include, but not be limited to: scrapers, brushes, brooms, staple guns, tarpaulins, shovels, rubber squeegees, dust pans, other tools, scaffolding, staging, enclosed chutes, wooden ladders, lumber necessary for the construction of asbestos regulated containment work areas, UL approved temporary electrical equipment, material and chords, ground fault circuit interrupters, water hoses of sufficient length, fire extinguishers, first aid kits, portable toilets, logbooks, log forms, markers with indelible ink, spray paint in bright color to mark areas, project boundary fencing, etc.

1.30 PRECONSTRUCTION CONFERENCE

- A. The Contractor, and the Contractor's designated onsite "competent person," shall meet with the Owners Representative and Owner prior to beginning work at a preconstruction conference to discuss the details of the Contractor's Abatement Plan, including work procedures and safety precautions. Once accepted by the Owner's Representative and Owner, the Abatement Plan will be enforced as if an addition to the specification.

PART 2 - PRODUCTS

2.1 ENCAPSULANTS

- A. Encapsulant shall conform to USEPA requirements, shall contain no toxic or hazardous substances.

PART 3 - EXECUTION

3.1 GENERAL

- A. Asbestos abatement work shown on plans and drawings shall be performed as specified herein. Personnel shall wear and utilize protective clothing and equipment as specified herein. Eating, smoking, drinking, or applying cosmetics shall not be permitted in the asbestos regulated work area. All hot work (burning, cutting, welding, etc.) shall be conducted under strictly controlled conditions in conformance with CFR 29 Part 1926. Personnel of other trades not engaged in asbestos abatement activities shall not be exposed at any time to airborne concentrations of asbestos unless all the administrative and personal protective provisions as

required by the Contractors Asbestos Abatement Plan are complied with. The building heating, ventilating, and air conditioning system shall be shut down, all openings to the system capped leading into the abatement work area.

- B. Electrical service shall be disconnected where necessary to facilitate wet removal. Temporary electrical service shall be provided by the Contractor as needed. Temporary power provided by the Contractor shall be adequate to power for the Owner's Representatives' air monitoring equipment.
- C. If an asbestos or lead-containing waste spill occurs outside of the regulated work area, work shall be stopped and the Owner's Representative and Owner shall be notified. The condition shall be corrected to the satisfaction of the Owner's Representative and Owner including air sampling, prior to resumption of work.

### 3.2 PROTECTION OF ADJACENT WORK OR AREAS TO REMAIN

- A. Asbestos and lead-containing material abatement work shall be performed without damage or contamination of adjacent work or areas. Where such work or area is damaged or contaminated as verified by the Owner's Representative using visual inspection and/or sample analysis, it shall be restored to its original condition or decontaminated by the Contractor at no expense to the Owner as deemed appropriate by the Owner's Representative. This includes inadvertent spill of dirt, dust or debris in which it is reasonable to conclude that asbestos may exist. When these spills occur, work shall stop in all affected areas immediately and the spill shall be cleaned. When satisfactory visual inspection and/or sampling analysis results are obtained and have been evaluated by the Contractor and the Owner's Representative, work may proceed.

### 3.3 FURNISHINGS, FIXTURES AND EQUIPMENT

#### A. Removal of Furnishings and Equipment

- 1. The Owner will remove all sensitive equipment and furniture from the work areas before asbestos and/ or lead abatement work begins.

#### B. Items to Remain

- 1. Contractor shall protect existing facilities throughout the facility that are not to be impacted by the renovation scope. Costs for repairs associated with damage incurred during abatement, will be at the Contractor's expense.

### 3.4 BUILDING VENTILATION SYSTEM AND CRITICAL BARRIERS

- A. Any building ventilating system supplying air into or returning air out of an asbestos regulated work area shall be shut down and isolated by lockable switch or other positive means in accordance with CFR 29 Part 1910, Section 1910.147, to prevent accidental start-up and isolated by airtight seals to prevent contaminant spread through the system. Air-tight critical barriers shall be installed on all building ventilating openings that supply, or return air from the



building ventilation system or serves to exhaust air from the building, that are located inside the asbestos regulated work area. The critical barriers shall consist of air-tight rigid covers for building ventilation supply and exhaust grills where the ventilation system is required to remain in service during abatement. Edges to wall, ceiling and floor surfaces shall be sealed with industrial grade duct tape.

### 3.5 PRECLEANING

- A. Surfaces shall be cleaned by HEPA vacuum and adequately wet wiped prior to establishment of containment.

### 3.6 ASBESTOS CONTROL AREA REQUIREMENTS

- A. The majority of tasks required during this project will be performed under full negative air containment and non-friable removal methods. However, if needed, regulated containment areas shall be established and maintained where necessary to complete the abatement work tasks. Viewing inspection window shall be installed on the wall of containment enclosure, as specified herein. The following procedures shall be performed sequentially and each activity shall be completed before proceeding to the next. Various steps may be omitted for an individual containment area when that work is not specified on the drawings.

1. Furnishings in the asbestos regulated work area shall be cleaned, protected in place removed as specified herein.
2. Tools, scaffolding, staging, and incidentals necessary for the work shall be placed in the area to be isolated prior to erection of work area enclosed containment.
3. Building ventilating systems serving the work area shall be shutdown or isolated.
4. Power to the asbestos regulated work area shall be locked-out by switching off all breakers serving power or lighting to this area in accordance with CFR 29 Part 1910.
5. Surfaces shall be pre-cleaned as required herein.
6. Personnel Decontamination Unit shall be installed as specified. Load-Out unit shall be installed as specified herein.
7. Critical barriers shall be installed as required for building ventilation system and in the plenum space as required herein.
8. Local exhaust ventilation system shall be installed as specified.

### 3.7 CLEAN-UP

- A. The Contractor shall maintain a clean work area by performing on a daily basis the following housekeeping functions at the end of each shift:

1. Loose ACM shall be prepared for disposal by packaging the waste and removing it from the work area to the load-out area.
2. Work area shall be HEPA vacuumed.
3. Polyethylene in work and high traffic areas shall be inspected and repaired.
4. Containment area shall be wet wiped if air sample results exceed prescribed level.

### 3.8 ASBESTOS HANDLING PROCEDURES

A. The Contractor shall employ proper handling procedures in accordance with CFR 29 Part 1926 and CFR 40 Part 61, Subpart M and the specification requirements herein. The specific abatement techniques and items identified shall be detailed in the Contractor's Asbestos Hazard Abatement Plan including but not limited to details of construction materials, equipment, and handling procedures. The following task descriptions detail the required abatement handling technique.

#### 1. Removal of ACM From Interior Architectural System

a. After completion of all asbestos removal work, surfaces from which asbestos containing materials have been removed shall be wet wiped or sponged clean, or cleaned by some equivalent method to remove all visible residue. After the gross amounts of asbestos have been removed from every surface, all remaining visible accumulations of asbestos on floors shall be collected using plastic shovels, rubber squeegees, rubber dustpans and HEPA vacuum cleaners as appropriate to maintain the integrity of the containment barrier. When all insulation has been removed, workmen shall use HEPA vacuum cleaners to vacuum every surface. Particular attention shall be paid to those surfaces or locations that could harbor accumulations or residual asbestos dust.

#### 2. Sealing Contaminated Items Designated for Disposal

a. Contaminated architectural, mechanical, and electrical appurtenances and other contaminated items designated for removal shall be coated with an asbestos lockdown encapsulant at the demolition site before being removed from the asbestos control area. These items need to be vacuumed prior to application of the lock-down encapsulant.

b. The asbestos lockdown encapsulant shall be tinted a contrasting color. It shall be spray-applied by airless method. Thoroughness of sealing operation shall be visually gauged by the extent of colored coating on exposed surfaces.

### 3.9 FINAL CLEANING AND PRE-VISUAL INSPECTION

B. The regulated abatement work area shall be cleaned at the completion of the abatement by collecting, packing, and storing all gross contamination. A final cleaning shall include HEPA vacuum and wet cleaning of all exposed surfaces and equipment in the asbestos regulated work area. Upon completion of the cleaning, the Contractor's competent person shall conduct a pre-visual inspection of the cleaned area in preparation for the final inspection to be conducted with

the Owners Representative. The Contractor shall re-clean, as necessary. Upon completion of the final cleaning, the Contractor and the Owners Representative shall conduct a final visual inspection of the cleaned work area in accordance with ASTM E 1368 and document the results on the Final Cleaning and Visual Inspection. If the Owners Representative rejects the abatement area as not meeting final cleaning requirements, the Contractor shall re-clean as necessary and have a follow-up inspection with the Owners Representative. Re-cleaning and follow-up re-inspections by the Owners Representatives shall be at the Contractor's expense.

### 3.10 LOCKDOWN

- A. Prior to removal of plastic barriers and after clean up of gross contamination and final visual inspection, a post removal (lockdown) encapsulant shall then be spray applied to foundation walls, underside of floors, and all vertical and horizontal surfaces within the work area. The abatement area shall include but not be limited to constructed enclosures, barriers, polyethylene sheeting that covers any furnishings, and equipment articles to be discarded, critical barriers, air locks, load out units for bag removal, and onsite constructed decontamination unit.

### 3.11 AIR MONITORING

- A. Air Monitoring by the Contractor:

1. The Contractor shall provide daily 8-hour TWA PEL and daily 30-minute Excursion Limit personal breathing zone air monitoring in accordance with and in addition to 29 CFR 1926.1101(f), including all amendments, and Appendix A of the OSHA standard within the work sites throughout all asbestos work site enclosure, material stripping, removal, cleaning encapsulation operations, or any other activities which might disturb asbestos-containing materials to insure that the workers are adequately protected at all times.
2. Samples shall be collected by calibrated pumps whose flow rates can be determined to an accuracy of plus or minus 5 percent. Calibrate pumps both prior to and after each use with a representative filter in line.
3. Analysis of samples shall be done in accordance with 29 CFR 1926.1101(f) and Appendix A of the OSHA standard. The results of all samples shall be posted outside the containment area within 48 hours of sampling and maintained there until the project has been concluded. This data shall include both the results of individual samples and the results of 8 hour TWA and 30-minute Excursion Limit determinations. Posted results shall include a synopsis of work activities for which the results are representative. Records shall be made of each employee's personal monitoring results and the employee shall be notified of these results within 15 days either individually or by posting them in a central location in accordance with 29 CFR 1926.1101(f).
4. All analytical results from the Contractor's air monitoring shall be posted at the work site entrance as soon as they become available and not more than 48 hours from the time in which the samples were taken.

B. Air Monitoring by the Owner:

1. The Owner shall provide the services of an independent testing laboratory with qualified analysts and appropriate equipment to conduct sample analyses of area air samples using the methods prescribed in CFR 29 Part 1926 Section 1926.58 to include NIOSH Pub No. 84-100 Method 7400. Sampling performed in accordance with CFR 29 Part 1926 Section 1926.58 shall be performed by the Owners Representative. The Owners Representative shall perform final clearance air sampling utilizing Phase Contrast Microscopy (PCM) analysis. For environmental quality control and final air clearance NIOSH Pub No. 84-100 Method 7400 (PCM) with optional confirmation of results by NIOSH Pub No. 84-100 Method 7402 Transmission Electron Microscopy (TEM) the mandatory EPA TEM Method specified at CFR 40 Part 763 shall be used. For environmental and final clearance samples, sampling will be conducted at a sufficient velocity and time to collect a sample volume necessary to establish the limit of detection of the method used at 0.01 f/cc. Asbestos fiber concentration confirmation of the total fiber concentration results of environmental, quality assurance and final air clearance samples, collected and analyzed by NIOSH Pub No. 84-100 Method 7400, may be conducted.

a. Sampling Prior to Asbestos Work

- i. The baseline air sampling shall be established one day prior to the masking and sealing operations for each abatement area site. The background shall be established by performing area sampling in similar but uncontaminated sites in the building. Pre-abatement (NIOSH Pub No. 84-100 Method 7400, PCM, and EPA TEM Method specified at CFR 40 Part 763) air samples shall be collected at a minimum of three locations. These locations are: outside the building, inside the building, but outside the abatement area perimeter and inside each abatement area. One sample shall be collected for every 185 square meters 2,000 square feet of floor space. At least two sample locations shall be collected outside the building. The PCM samples shall be analyzed immediately; and if any result in fiber concentration greater than 0.01 f/cc, asbestos fiber concentration shall be confirmed using NIOSH Pub No. 84-100 Method 7402 (TEM) at Owner expense.

b. Sampling During Asbestos Abatement Work

- i. The Owner shall provide area air sampling as indicated in CFR 29 Part 1926 Section 1926.58, and meet state and local requirements. Area air sampling shall be conducted at least once every shift, close to the work in the containment area, outside the clean room entrance to the containment area, (outside air lock for mini and modified containment areas), inside the clean room (inside the air lock for mini and modified containment areas), outside the load-out unit exit, if used, and at the exhaust discharge point of the local exhaust system.

c. Sampling After Final Clean-Up (Clearance Sampling)

- i. Prior to conducting final air clearance sampling, the Contractor and the Owners Representative shall conduct a final visual inspection of the Contractor's final cleanup of the abated asbestos regulated work area as specified. Final clearance air monitoring shall not begin until acceptance of this final cleaning by the Owners Representative. The Owners Representative will provide area sampling of airborne fibers using air sampling techniques as defined in the EPA 560/5-85-024 or as otherwise required by Federal or state requirements.
- d. Air Clearance Failure
  - i. Should clearance-sampling results fail to meet the final clean-up requirements, the Contractor shall pay all costs associated with all required re-cleaning, re-sampling and analysis until final clean-up requirements are met.

### 3.12 SITE INSPECTION

- A. While performing asbestos removal work, the Contractor shall be subject to onsite inspection by the Owners Representative who may be assisted by or represented by quality assurance, safety and industrial hygiene personnel. If the work is found to be in violation of this specification, the Owner or his representative will issue a stop work order to be in effect immediately and until the violation is resolved. Standby time required to resolve the violation shall be at the Contractor's expense.

### 3.13 CLEAN-UP AND DISPOSAL

#### A. Housekeeping

1. Surfaces of the regulated work area shall be kept free of accumulation of asbestos-containing debris. Meticulous attention shall be given to restricting the spread of dust and debris during the abatement activities. HEPA filtered vacuum cleaners shall be used. The space shall not be blown down with compressed air.

#### B. Title to Materials

1. Material resulting from abatement work, except as specified otherwise, shall become the property of the Contractor and shall be disposed of as specified in applicable local, state, and Federal regulations and herein.

#### C. Collection and Disposal of Asbestos

1. Asbestos waste, asbestos contaminated water, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing, shall be collected and placed in sealed leak-tight, containers (e.g. double 6-mil plastic bags), sealed 6-mil double wrapped polyethylene sheet, sealed fiberboard boxes or other approved containers. Waste within the containers must be wetted in case the container is breached. A warning and Department of Transportation (DOT) label shall be affixed or preprinted on each bag. Waste asbestos material shall be disposed of at an EPA, state and local approved asbestos landfill. For temporary storage, sealed impermeable containers shall be stored in asbestos waste load-

out unit or in a storage/transportation conveyance (i.e.; dumpster, roll-off waste boxes, etc.) in a manner as accepted by and in an area as assigned by the Owner. Procedure for hauling and disposal shall comply with CFR 40 Part 61, Subpart M, and state, regional, and local standards.

D. Asbestos Waste Shipment Record

1. The Contractor shall complete and provide final completed copies of the Waste Shipment Record for all shipments of waste material as specified in CFR 40 Part 61, Subpart M and other required state waste manifest shipment records within 3 days of delivery to the landfill.



APPENDIX

Asbestos-Containing Materials Investigation Report

Lead-Based Paint Investigation Report

Developed by F&ME Consultants

Dated: August 8, 2014





**ASBESTOS CONTAINING  
MATERIALS INVESTIGATION  
REPORT**

**WILLIAMS-BRICE STADIUM  
CUSTODIAL SUPPLY AREA  
1125 GEORGE ROGERS BLVD.  
COLUMBIA, SOUTH CAROLINA**

**PREPARED FOR**



**UNIVERSITY OF  
SOUTH CAROLINA**

University of South Carolina  
743 Green Street  
Columbia, South Carolina 29208

**PREPARED BY:**

F&ME Consultants  
3112 Devine Street  
Columbia, South Carolina 29205  
(803) 254-4540

**August 8, 2014**

**E5300.260**



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Physical Assessment Data Sheets  
Bulk Asbestos Analytical Reports  
Chain of Custody

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### APPENDIX D

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SCDHEC Abatement Project Forms



## I. EXECUTIVE SUMMARY

As requested, F&ME Consultants has completed the Asbestos Containing Materials (ACM) investigation of the Williams-Brice Stadium custodial supply area located at 1125 George Rogers Boulevard in Columbia, South Carolina. This investigation was conducted in accordance with SCDHEC, USEPA, and OSHA regulations.

It is our understanding that the purpose of this investigation was to identify ACM that may be impacted by the planned renovations to the former visiting team locker room and shower area of the subject structure. These areas are currently being utilized by the custodial and concessions staff to store supplies and equipment. The scope of this ACM investigation was to identify, sample and assess materials suspected of containing asbestos within the areas to be impacted by the renovations. The field investigation was performed on July 23, 2014.

The investigation of the subject structure identified numerous suspect materials. Of the materials analyzed, laboratory results indicate that the spray-applied ceiling texture, the joint compound associated with drywall walls and ceilings, and the exterior wall texturing contain asbestos. Attached is the report of our findings.

We sincerely appreciate the opportunity to assist you with this project. Should you have any questions or require additional information concerning this limited investigation, please do not hesitate to contact our office at (803) 254-4540.

Sincerely,

F&ME CONSULTANTS



Michael S. Mincey

Environmental Professional  
Asbestos Consultant/ Management Planner  
SCDHEC License No: MP-00161  
Expiration Date 02/25/2015



Glynn M. Ellen

Senior Environmental Professional  
Asbestos Consultant/ Management Planner  
SCDHEC License No: ASB-22641  
Expiration Date 02/25/2015

MSM/GME/jls

## II. INTRODUCTION

As requested, F&ME Consultants has completed the Asbestos Containing Materials (ACM) investigation of the Williams-Brice Stadium custodial supply area located at 1125 George Rogers Boulevard in Columbia, South Carolina. This investigation was conducted in accordance with SCDHEC, USEPA, and OSHA regulations.

It is our understanding that the purpose of this investigation was to identify ACM that may be impacted by the planned renovations to the former visiting team locker room and shower area of the subject structure. These areas are currently being utilized by the custodial and concessions staff to store supplies and equipment. The scope of this ACM investigation was to identify, sample and assess materials suspected of containing asbestos within the areas to be impacted by the renovations. The field investigation was performed on July 23, 2014.

The results, conclusions and recommendations from this investigation are representative of the conditions observed at the site on the dates of the field inspection. F&ME does not assume responsibility for any changes in conditions or circumstances that occur after the inspection. Use of this document for bidding purposes is not recommended without prior consultation with F&ME.

## III. INVESTIGATION RESULTS

The purpose of this investigation was to locate, sample and record the physical characteristics of suspect ACM associated with the interior and exterior portions of the subject structure. Therefore, the quantities and physical condition of suspect materials were assessed and bulk samples of these materials were submitted for laboratory analysis.

The area included in the investigation is a portion of the original stadium and is currently used as a custodial and concessions supply area. The stadium was originally built in 1934, and it is our understanding that this portion of the subject structure was originally used as the visiting team's locker room and showers. The space is found in the lower level of the stadium, beneath the seating of the east stands. The wall systems associated with this area of the stadium are constructed of a combination of concrete, masonry brick and block walls.



*Photo 1. Exterior of the subject structure includes concrete, masonry block and brick walls.*

Interior finishes within this space include drywall wall and ceilings, masonry block and brick walls, plaster ceilings, spray-applied ceiling texture, a suspended ceiling, concrete floors, vinyl baseboard and carpeting. No discernible roof system was noted. When accessing the areas above the proposed renovation area, only the ceiling joist framing and the upper surfaces of the ceiling system were observed.

During the investigation, evidence of previous renovation activities was observed, to include the addition of a masonry block wall with doorways and the suspended ceiling grid. The inspector also observed overspray from the application of the spray-applied ceiling texture on the steel

columns and bracing of the custodial common area. Furthermore, an 18”x 9” wide soffit constructed with drywall and spray-applied ceiling texture was noted on the east wall of the custodial common area at the junction of the ceiling and the wall. The soffit extends the entire length of north wall.

Suspect materials identified during this investigation included the following:

- Spray-applied ceiling texture (1,300 S.F.)
- Baseboard and associated adhesive (100 L.F.)
- Plaster (395 S.F.)
- White caulking (17 L.F.)
- Exterior wall texture (450 S.F.)
- Exterior felt on pipes & wall (10 S.F.)
- Drywall and associated joint compound (1,500 S.F.)
- 2’ x 4’ ceiling panels (312 S.F.)
- Carpet adhesive (312 S.F.)
- Paper backing on fiberglass insulation (630 S.F.)
- Drywall with no joint compound (120 S.F.)

Remaining building materials (i.e. concrete, metal, wood, brick, carpet, etc.) were not considered suspect.

Bulk samples of suspect materials were analyzed by Polarized Light Microscopy (PLM) in accordance with EPA 600/R-93/116. Confirmation Transmission Electron Microscopy (TEM) was also performed on any non-friable organically bound materials that tested negative for asbestos content as per SCDHEC regulations effective May 27, 2011. A “first-positive stop” protocol was also requested, meaning that if a sample of a material was found to contain asbestos, then subsequent samples of that same material were not analyzed. Proper sampling and chain-of-custody protocol were followed to ensure appropriate handling and delivery of samples to the analytical laboratory. See Appendix A for the Sample Location Plan (Figure 2).

A total of thirty-seven (37) bulk samples were collected from the subject structure. Due to multiple layering of some materials and implementation of the “first-positive stop” protocol, thirty-six (36) samples were analyzed by PLM and five (5) were TEM-confirmed. Of the materials analyzed, the following were found to contain asbestos: spray-applied ceiling texture, joint compound associated with drywall walls and ceilings, and the exterior wall texturing (also see Table II, Summary of Asbestos Containing Materials). For more information regarding the location of these materials, refer to the Homogeneous Area Plan (Figure 3) located in the appendix.



The Appendices include a Site Vicinity Map (Figure 1), Sample Location Plan (Figure 2), Homogeneous Area Plan (Figure 3), a Summary of Samples (Table I), a Summary of Asbestos Containing Materials (Table II), Physical Assessment Data Sheets, Bulk Asbestos Analytical Reports, the Chain of Custody, Personnel Certifications, a SCDHEC Regulation Summary and SCDHEC Abatement Project Forms.

#### IV. ACM DESCRIPTION & ASSESSMENT

The following items are descriptions and quantities of the asbestos-containing materials identified during this investigation (See Figure 3, Homogeneous Area Plan):

- HA-1 – Spray-applied ceiling texture (~1,300 S.F.)

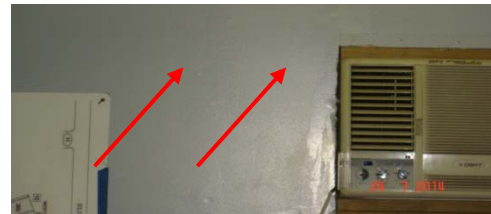
Asbestos-containing spray-applied ceiling texture is located on the ceilings in supply areas #1 - #5 and in the hallway. This material is in a significantly damaged and friable condition due to years of water intrusion. Also, overspray was noted on structural steel framing above portions of the renovation area. Prior to renovation activities, this material must be removed and disposed of as ACM by a licensed abatement contractor.



*Photo 2. Asbestos-containing spray-applied ceiling texture located in various rooms of the structure.*

- HA-2 – Joint compound associated with drywall (~1,500 S.F.)

This ACM joint compound is associated with the non-ACM drywall ceilings found within the renovation area and on drywall walls found in the common area (see Homogeneous Area Plan). Both the drywall and the ACM joint compound are in significantly damaged and friable condition due to years of water intrusion. Prior to renovation activities, these materials must be removed and disposed of as ACM by a licensed abatement contractor.



*Photo 3. Asbestos-containing joint compound associated with drywall ceilings and a wall are located in various rooms of the structure.*

- HA-3 – Exterior wall texture (~450 S.F.)

Asbestos-containing exterior wall texture is located on the east exterior concrete wall of the supply areas #1 and #5. This material has some localized damage, is in a friable condition and is coming off in peeling paint where this occurs. Debris was noted on the floor adjacent to the wall. Prior to renovation activities, this material must be removed and disposed of as ACM by a licensed abatement contractor, to include the surrounding debris.



*Photo 4. Asbestos-containing exterior wall texture is located on the east wall of the custodial supply area #1 and the custodial common area of the structure.*

Asbestos containing materials are categorized by SCDHEC as friable (a.k.a. regulated asbestos containing materials, or RACM), Category I non-friable ACM (packing, gaskets, floor coverings,

asphalt roofing products, etc.) and Category II non-friable ACM (other non-friable materials not covered in Category I). SCDHEC regulates any disturbances of friable/RACM, requiring its removal prior to renovation or demolition activities.

SCDHEC also legally tracks the dumping of all ACM into landfills. Therefore, SCDHEC must be notified prior to abatement and demolition projects in order to arrange for the proper disposal of ACM and associated contaminated debris. Most landfills will not accept ACM or asbestos-contaminated debris. This is an important consideration for the owner because it is more expensive to dispose of ACM than normal debris. If the abatement/ demolition contractor selects a landfill that accepts ACM, the entire load of abatement/ demolition debris could be transported to the permitted landfill. However, since the ACM would be mixed in with the total demolition debris, all of the debris would be considered to be ACM resulting in higher disposal costs. Therefore, it is recommended that removal of all asbestos is conducted prior to and separate from building demolition activities.

Unlike SCDHEC, OSHA does not distinguish between friable and non-friable ACM, regulated and non-regulated ACM, and/or ACM in good condition versus ACM in poor/damaged condition. Instead, OSHA regulates all worker contact with asbestos.

This report has been prepared exclusively for the University of South Carolina, and shall not be disseminated in whole or part to other parties without prior consent from the University of South Carolina or F&ME Consultants, Inc. No other environmental issues are addressed in this report.

## **V. RECOMMENDATIONS**

It is our understanding that the area of the stadium included in this investigation is scheduled for renovations. Based on the current condition and types of ACM identified, all ACM associated with this structure must be abated using friable abatement practices, to include full negative air containment. Due to the fact that the spray-applied ceiling texture is associated with the asbestos-containing joint compound and drywall ceilings, these materials would be removed as a single abatement task. For this reason, the quantities of the friable ACM to be abated fall below SCDHEC's requirement for an abatement design.

It should be noted that overspray from the spray-applied ceiling texturing was found on structural steel framing. This should be taken into consideration when planning for the abatement of the identified ACM.

All abatement work must be performed by an AHERA-certified and SCDHEC-licensed Abatement Contractor. This work must be performed in accordance with all applicable regulations and guidelines, such as notification and air monitoring requirements (see below for a summary). Additionally, due to the recognized historic significance of the structure, it is recommended that any abatement activities be performed in a manner that preserves the integrity of the historic nature of the subject structure.

If any concealed and/or inaccessible ACM are encountered during asbestos abatement or renovation activities, the affected contractor(s) must stop work, take appropriate actions, and notify the Owner/ Abatement Contractor/ Asbestos Consultant for an appropriate response

action. The SCDHEC must be notified in the event that any additional ACM is discovered, as well as changes in the condition of identified ACM.

All asbestos waste, including contaminated building materials (i.e. non-ACM drywall), must be deposited in a landfill permitted by the SCDHEC for receiving ACM.

The SCDHEC's Standards of Performance for Asbestos Projects (R 61-86.1) includes requirements for abatement projects regarding notifications, project design, air sampling and analysis, etc. For informational purposes, some of these requirements are summarized below:

*Notifications.* Written notification (SCDHEC Form 3430) must be submitted to SCDHEC at least two (2) calendar weeks prior to initiation of abatement activities for renovation/demolition projects. A copy of this inspection report and applicable fee payment must be attached to the notification. Additional fees may be required. Copies of all notifications and documents pertinent to the abatement operations must be posted on the job site during abatement work. The Owner/Operators must notify all parties involved with this project of the nature of the work as well as the locations and quantities of asbestos materials to be disturbed or those located near demolition/removal work areas. This notification requirement is also extended to any persons/employees who work near the demolition/removal work areas.

*Project Design.* Furthermore, abatement projects that will remove more than 3,000 square, 1,500 linear or 656 cubic feet of regulated asbestos-containing materials are required to have a licensed and certified Abatement Project Designer develop a project design prior to the commencement of any abatement activities. The Abatement Contractor is required to adhere to the design, which must address all information as directed by the regulations.

*Air Monitoring.* The Abatement Contractor is responsible for daily personal air sampling for Abatement Workers in compliance with current OSHA standard 29 CFR 1926.1101. All remaining air monitoring services required for a renovation project (i.e. backgrounds, areas, and clearances) will be provided by the Owner or the Owner's Representative, as required by SCDHEC.

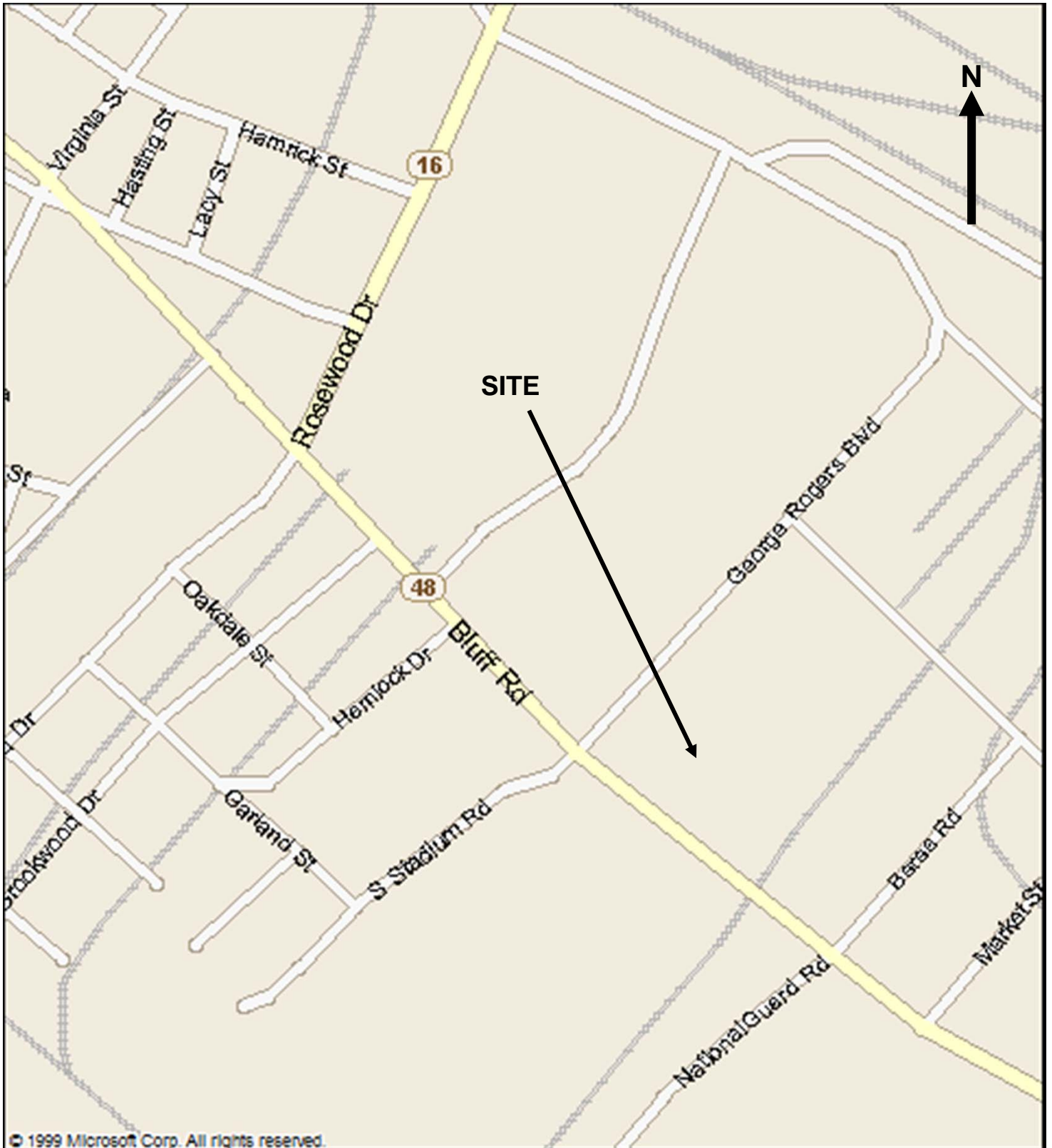
## **APPENDIX A**

Site Vicinity Map (Figure 1)

Sample Location Plan (Figure 2)

Homogeneous Areas Plan (Figure 3)





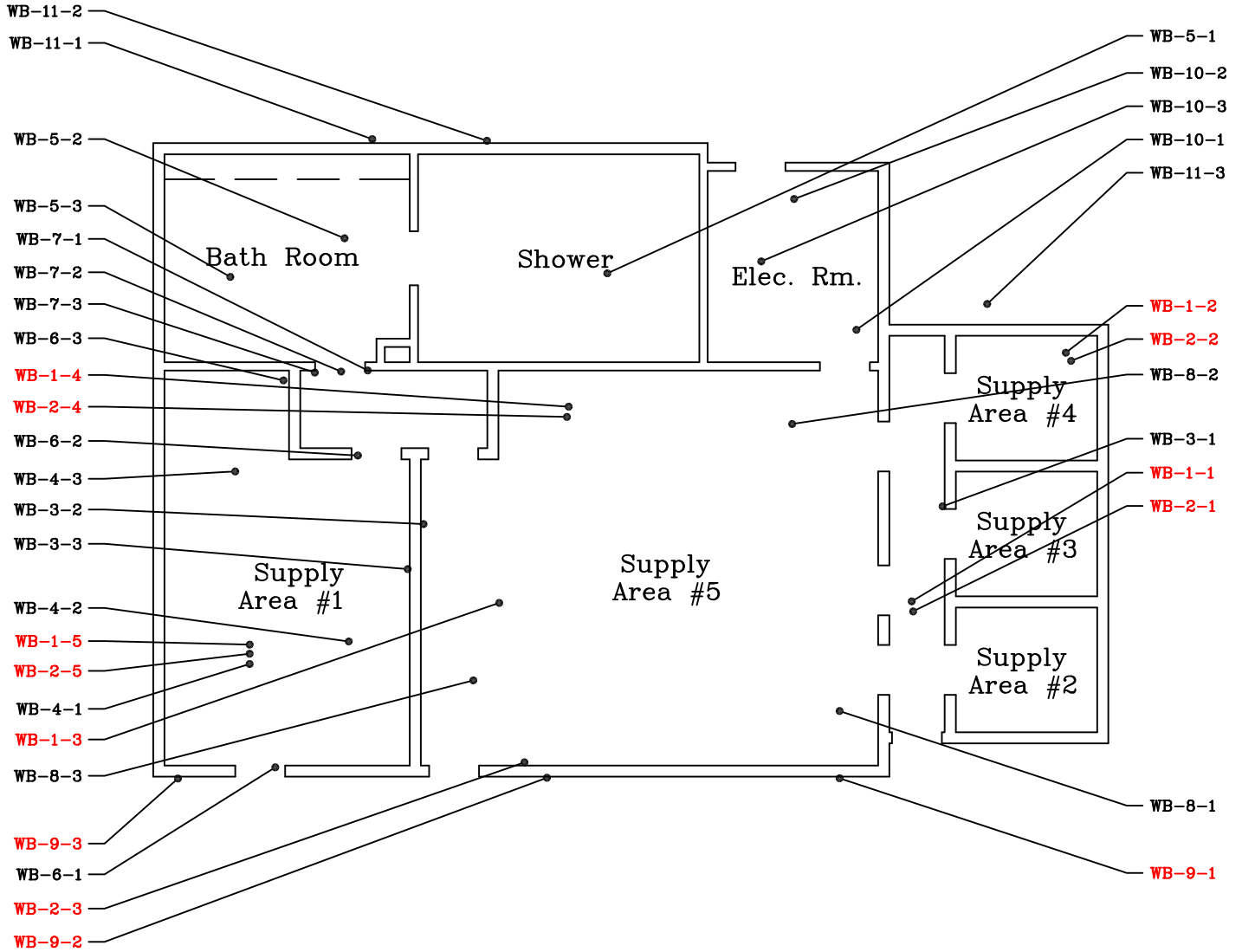
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**F&ME**  
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**SITE VICINITY MAP**  
Williams-Brice Stadium Custodial Supply Area  
Columbia, South Carolina

UNIVERSITY OF SOUTH CAROLINA

Prepared By:	MSM	Scale:	N.T.S.
Checked By:	JLS	Project:	E5300.26
Approved By:	GME	Figure:	1



**F&ME**  
CONSULTANTS

SAMPLE LOCATION PLAN  
WILLIAMS-BRICE STADIUM CUSTODIAL SUPPLY AREA  
COLUMBIA, SOUTH CAROLINA

UNIVERSITY OF SOUTH CAROLINA

DRAWN BY: MSM  
CHECKED BY: JLS  
APPROVED BY: GME

SCALE: 1"=10'  
PROJECT: E5300.26  
FIGURE: 2



HA-1 Spray Applied Ceiling Texture



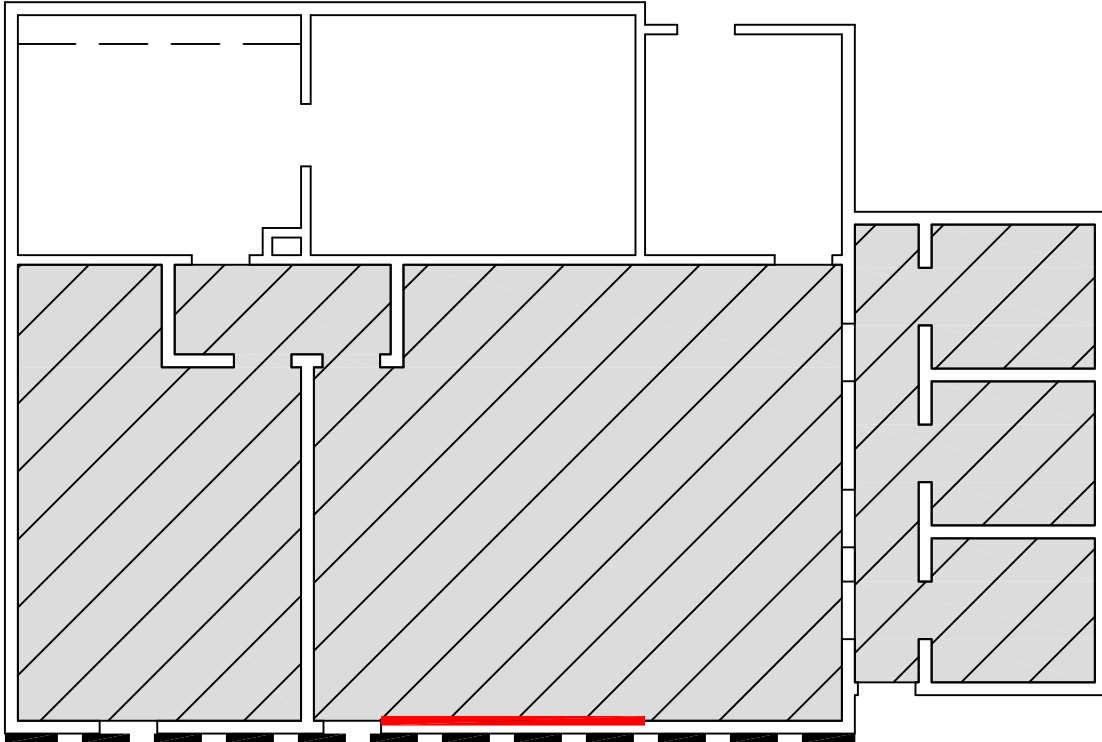
HA-2 Joint Compound Associated with Drywall on Ceiling



HA-2 Joint Compound Associated with Drywal on Walll



HA-3 Exterior Wall Texture



**F&ME**  
CONSULTANTS

HOMOGENEOUS AREA PLAN  
WILLIAMS-BRICE STADIUM CUSTODIAL SUPPLY AREA  
COLUMBIA, SOUTH CAROLINA

UNIVERSITY OF SOUTH CAROLINA

DRAWN BY: MSM  
CHECKED BY: JLS  
APPROVED BY: GME

SCALE: 1"=10'  
PROJECT: E5300.26  
FIGURE: 3





## **APPENDIX B**

Summary of Samples (Table I)

Summary of Asbestos Containing Materials (Table II)

Summary of Inspection

Physical Assessment Data Sheets

Bulk Asbestos Analytical Reports

Chain of Custody



**TABLE I. SUMMARY OF SAMPLES**

<b>Sample ID</b>	<b>Sample Description</b>
WB-1-1	Spray-Applied Ceiling Texture
WB-1-2	Spray-Applied Ceiling Texture
WB-1-3	Spray-Applied Ceiling Texture
WB-1-4	Spray-Applied Ceiling Texture
WB-1-5	Spray-Applied Ceiling Texture
WB-2-1	Drywall/Joint Compound
WB-2-2	Drywall/Joint Compound
WB-2-3	Drywall/Joint Compound
WB-2-3	Drywall/Joint Compound
WB-2-4	Drywall/Joint Compound
WB-2-5	Drywall/Joint Compound
WB-3-1	Baseboard & Adhesive
WB-3-2	Baseboard & Adhesive
WB-3-3	Baseboard & Adhesive
WB-4-1	2' x 4' Small/Large Pinhole Ceiling Panels
WB-4-2	2' x 4' Small/Large Pinhole Ceiling Panels
WB-4-3	2' x 4' Small/Large Pinhole Ceiling Panels
WB-5-1	Plaster (Both Coats)
WB-5-2	Plaster (Both Coats)
WB-5-3	Plaster (Both Coats)
WB-6-1	Carpet Adhesive
WB-6-2	Carpet Adhesive
WB-6-3	Carpet Adhesive
WB-7-1	White Caulking
WB-7-2	White Caulking
WB-7-3	White Caulking
WB-8-1	Paper Backing on Fiberglass Insulation
WB-8-2	Paper Backing on Fiberglass Insulation
WB-8-3	Paper Backing on Fiberglass Insulation
WB-9-1	Exterior Wall Texture
WB-9-2	Exterior Wall Texture
WB-9-3	Exterior Wall Texture
WB-10-1	Drywall with No Joint Compound
WB-10-2	Drywall with No Joint Compound
WB-10-3	Drywall with No Joint Compound
WB-11-1	Felt on Exterior Pipe
WB-11-2	Felt on Exterior Wall
WB-11-3	Felt on Exterior Pipe

**TABLE I**

**TABLE II. SUMMARY OF ASBESTOS CONTAINING MATERIALS**

<b>Sample ID</b>	<b>Sample Description</b>	<b>% Asbestos</b>
WB-1-1	Spray-Applied Ceiling Texture	3% Chrysotile
WB-1-2	Spray-Applied Ceiling Texture	First Positive Stop
WB-1-3	Spray-Applied Ceiling Texture	First Positive Stop
WB-1-4	Spray-Applied Ceiling Texture	First Positive Stop
WB-1-5	Spray-Applied Ceiling Texture	First Positive Stop
WB-2-1	Drywall	None Detected
	Joint Compound	3% Chrysotile
WB-2-2	Drywall	None Detected
	Joint Compound	First Positive Stop
WB-2-3	Drywall	None Detected
	Joint Compound	First Positive Stop
WB-2-4	Drywall	None Detected
	Joint Compound	First Positive Stop
WB-2-5	Drywall	None Detected
	Joint Compound	First Positive Stop
WB-9-1	Exterior Wall Texture	3% Chrysotile
WB-9-2	Exterior Wall Texture	First Positive Stop
WB-9-3	Exterior Wall Texture	First Positive Stop

**TABLE II**

## **SUMMARY OF INSPECTION**

The following tables summarize the physical assessment data, sampling and assessment results.

As exhibited on these tables, coding is used to abbreviate the asbestos containing materials' (ACM) locations, characteristics and results. These codes are as follows:

### **TYPES OF ACM:**

Misc. = Miscellaneous

Sur. = Surfacing

TSI = Thermal System Insulation

### **ACM LOCATIONS:**

Homogeneous areas = Indicated by Roman Numerals, Room Number or Area Designation

Functional Space No.:

Functional Space Type:

1.

SA = Supply Area

2.

EW = Exterior Wall

### **ACM CHARACTERISTICS:**

F = Friable

NF = Non-Friable

### **ASSESSMENT RESULTS:**

(Refer to Physical Assessment Data)

### **POTENTIAL FOR DISTURBANCE:**

(Refer to Physical Assessment Data)

**PHYSICAL ASSESSMENT CATAGORIES:**

1. Damaged or significantly damaged friable thermal system insulation ACM.
2. Damaged friable surfacing ACM.
3. Significantly damaged friable surfacing ACM.
4. Damaged or significantly damaged friable miscellaneous ACM.
5. ACM with potential for significant damage.
6. ACM with potential for damage.
7. Any remaining friable ACM or friable suspect ACM.
8. Non-friable ACM.

**CLASSIFICATION FOR HAZARD POTENTIAL:**

(Tabular Display)

<b><u>Hazard Rank</u></b>	<b><u>ACM Condition</u></b>	<b><u>ACM Disturbance Potential</u></b>
7	Significantly Damaged	Any
6	Damaged	Potential for Significant Damage
5	Damaged	Potential for Damage
4	Damaged	Low
3	Good	Potential for Significant Damage
2	Good	Potential for Damage
1	Good	Low

**PHYSICAL ASSESSMENT DATA SHEET**



**Building:** Williams-Brice Stadium Custodial Supply Area

**Functional Space No:** 1 **Type:** SA **Location:** (See Homogeneous Area Plan)

**Type of Suspect Material:** TSI X **Surfacing** \_\_\_\_\_ **Misc.** \_\_\_\_\_

Description: HA-1, Spray-applied ceiling texture

Approximate Amount of Material (SF or LF): ~1,300 S.F.

**Condition:**

Percent Damage: \_\_\_\_\_ >0% \_\_\_\_\_ <10% \_\_\_\_\_ >10% \_\_\_\_\_ <25% X >25%

Extent of Damage : \_\_\_\_\_ Localized X Distributed

Type of Damage: X Deterioration X Water \_\_\_\_\_ Physical

**Description:**

Asbestos-containing spray-applied ceiling texture is located on the ceilings in supply areas #1 - #5 and in the hallway. This material is in a significantly damaged and friable condition due to years of water intrusion. Also, overspray was noted on structural steel framing above portions of the renovation area. Prior to renovation activities, this material must be removed and disposed of as ACM by a licensed abatement contractor.

Overall Condition Rating: Sig. Damaged X Damaged \_\_\_\_\_ Good \_\_\_\_\_

**Potential for Disturbance:**

	High	Moderate	Low	Friable ACM
Frequency of Potential Contact:	<u>_____</u>	<u>_____</u>	<u>X</u>	<u>X</u>
Influence of Vibration	<u>_____</u>	<u>_____</u>	<u>X</u>	<u>X</u>
Frequency of Air Erosion	<u>_____</u>	<u>_____</u>	<u>X</u>	<u>X</u>
Potential of Water Erosion	<u>_____</u>	<u>_____</u>	<u>X</u>	<u>X</u>

**Overall Potential Disturbance Rating:**

Potential for Sig. Damage	Potential for Damage	Low Potential for Damage
<u>_____</u>	<u>_____</u>	<u>3</u>

**Overall Hazard Rank #:**

Sig. Damaged	Pot. Sig. Damage	Potential Damage	Low Pot. Damage
<u>_____</u>	<u>_____</u>	<u>_____</u>	<u>7</u>

**Comments:** Potential for Disturbance and Hazard Ranking assessed is based on current usage of the facility.

**Signed:** Mike Minay **Date:** 07/29/2013



**PHYSICAL ASSESSMENT DATA SHEET**



**Building:** Williams-Brice Stadium Custodial Supply Area

**Functional Space No:** 1 **Type:** SA **Location:** (See Homogeneous Area Plan)

**Type of Suspect Material:** TSI X **Surfacing**            **Misc.**           

Description: HA-2, Joint compound associated with drywall

Approximate Amount of Material (SF or LF): ~1,500 S.F.

**Condition:**

Percent Damage:            >0%            <10%            >10%            <25%   X   >25%

Extent of Damage :            Localized              X   Distributed

Type of Damage:   X   Deterioration              X   Water            Physical

**Description:**

This ACM joint compound is associated with the non-ACM drywall ceilings found within the renovation area and on drywall walls found in the common area (see Homogeneous Area Plan). Both the drywall and the ACM joint compound are in significantly damaged and friable condition due to years of water intrusion. Prior to renovation activities, these materials must be removed and disposed of as ACM by a licensed abatement contractor.

Overall Condition Rating: Sig. Damaged              X   Damaged            Good           

**Potential for Disturbance:**

	<b>High</b>	<b>Moderate</b>	<b>Low</b>	<b>Friable ACM</b>
Frequency of Potential Contact:	<u>          </u>	<u>          </u>	<u>  X  </u>	<u>  X  </u>
Influence of Vibration	<u>          </u>	<u>          </u>	<u>  X  </u>	<u>  X  </u>
Frequency of Air Erosion	<u>          </u>	<u>          </u>	<u>  X  </u>	<u>  X  </u>
Potential of Water Erosion	<u>          </u>	<u>          </u>	<u>  X  </u>	<u>  X  </u>

**Overall Potential Disturbance Rating:**

Potential for Sig. Damage	Potential for Damage	Low Potential for Damage
<u>          </u>	<u>          </u>	<u>  3  </u>

**Overall Hazard Rank #:**

Sig. Damaged	Pot. Sig. Damage	Potential Damage	Low Pot. Damage
<u>          </u>	<u>          </u>	<u>          </u>	<u>  7  </u>

**Comments:** Potential for Disturbance and Hazard Ranking assessed is based on current usage of the facility.

**Signed:** Mike Minay **Date:** 07/29/2013

**PHYSICAL ASSESSMENT DATA SHEET**



**Building:** Williams-Brice Stadium Custodial Supply Area

**Functional Space No:** 2 **Type:** EW **Location:** (See Homogeneous Area Plan)

**Type of Suspect Material:** TSI X **Surfacing** \_\_\_\_\_ **Misc.** \_\_\_\_\_

Description: HA-3, Exterior Wall Texture

Approximate Amount of Material (SF or LF): ~450 S.F.

**Condition:**

Percent Damage: \_\_\_\_\_ >0% X <10% \_\_\_\_\_ >10% \_\_\_\_\_ <25% \_\_\_\_\_ >25%

Extent of Damage : X Localized \_\_\_\_\_ Distributed

Type of Damage: X Deterioration X Water \_\_\_\_\_ Physical

**Description:**

Asbestos-containing exterior wall texture is located on the east exterior concrete wall of the supply areas #1 and #5. This material has some localized damage, is in a friable condition and is coming off in peeling paint where this occurs. Debris was noted on the floor adjacent to the wall. Prior to renovation activities, this material must be removed and disposed of as ACM by a licensed abatement contractor, to include the surrounding debris.

Overall Condition Rating: Sig. Damaged \_\_\_\_\_ Damaged \_\_\_\_\_ X Good \_\_\_\_\_

**Potential for Disturbance:**

	<b>High</b>	<b>Moderate</b>	<b>Low</b>	<b>Friable ACM</b>
Frequency of Potential Contact:	<u>_____</u>	<u>X</u>	<u>_____</u>	<u>X</u>
Influence of Vibration	<u>_____</u>	<u>_____</u>	<u>X</u>	<u>X</u>
Frequency of Air Erosion	<u>_____</u>	<u>_____</u>	<u>X</u>	<u>X</u>
Potential of Water Erosion	<u>_____</u>	<u>X</u>	<u>_____</u>	<u>X</u>

**Overall Potential Disturbance Rating:**

Potential for Sig. Damage	Potential for Damage	Low Potential for Damage
<u>_____</u>	<u>2</u>	<u>_____</u>

**Overall Hazard Rank #:**

Sig. Damaged	Pot. Sig. Damage	Potential Damage	Low Pot. Damage
<u>_____</u>	<u>_____</u>	<u>5</u>	<u>_____</u>

**Comments:** Potential for Disturbance and Hazard Ranking assessed is based on current usage of the facility.

**Signed:** Mike Minay **Date:** 07/29/2013



**EMSL Analytical, Inc.**

706 Galin Street, Kernersville, NC 27284

Phone/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com>[greensborolab@emsl.com](mailto:greensborolab@emsl.com)

EMSL Order:	021404049
CustomerID:	FMEC62
CustomerPO:	E5300.26
ProjectID:	

Attn: **Glynn Ellen**  
**F & ME Consultants**  
**3112 Divine Street**

**Columbia, SC 29205**


Phone: (803) 254-4540  
 Fax: (803) 254-4542  
 Received: 07/24/14 10:00 AM  
 Analysis Date: 7/29/2014  
 Collected:

Project: **E5300.26 ACM Investigation- USC- Williams Brice Stadium Custodial Supply Area Renovation**

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
WB-1-1 <i>021404049-0001</i>	Spray- Applied Ceiling Texture	White/Beige/Grayish h Non-Fibrous Heterogeneous	1% Cellulose	96% Non-fibrous (other)	3% Chrysotile
WB-1-2 <i>021404049-0002</i>	Spray- Applied Ceiling Texture				<b>Stop Positive (Not Analyzed)</b>
WB-1-3 <i>021404049-0003</i>	Spray- Applied Ceiling Texture				<b>Stop Positive (Not Analyzed)</b>
WB-1-4 <i>021404049-0004</i>	Spray- Applied Ceiling Texture				<b>Stop Positive (Not Analyzed)</b>
WB-1-5 <i>021404049-0005</i>	Spray- Applied Ceiling Texture				<b>Stop Positive (Not Analyzed)</b>
WB-2-1-Drywall <i>021404049-0006</i>	Drywall/ Joint Compound	Brown/Gray Fibrous Heterogeneous	15% Cellulose 1% Glass	84% Non-fibrous (other)	<b>None Detected</b>
WB-2-1-Joint Compound <i>021404049-0006A</i>	Drywall/ Joint Compound	Beige/Grayish Non-Fibrous Homogeneous	1% Cellulose	96% Non-fibrous (other)	3% Chrysotile
WB-2-2-Drywall <i>021404049-0007</i>	Drywall/ Joint Compound	Brown/Gray Fibrous Heterogeneous	15% Cellulose 1% Glass	84% Non-fibrous (other)	<b>None Detected</b>

Analyst(s)  
 \_\_\_\_\_  
 Nicole Shutts (12)  
 Scott Combs (24)

  
 Stephen Bennett, Laboratory Manager  
 or other approved signatory

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 Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

Initial report from 07/29/2014 08:49:32

**EMSL Analytical, Inc.**

706 Gralin Street, Kernersville, NC 27284

Phone/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com>[greensborolab@emsl.com](mailto:greensborolab@emsl.com)

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ProjectID:

Attn: **Glynn Ellen**  
**F & ME Consultants**  
**3112 Divine Street**

**Columbia, SC 29205**

Phone: (803) 254-4540  
 Fax: (803) 254-4542  
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Project: **E5300.26 ACM Investigation- USC- Williams Brice Stadium Custodial Supply Area Renovation**

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
WB-2-2-Joint Compound <i>021404049-0007A</i>	Drywall/ Joint Compound				<b>Stop Positive (Not Analyzed)</b>
WB-2-3-Drywall <i>021404049-0008</i>	Drywall/ Joint Compound	Brown/Gray Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (other)	<b>None Detected</b>
WB-2-3-Joint Compound <i>021404049-0008A</i>	Drywall/ Joint Compound				<b>Stop Positive (Not Analyzed)</b>
WB-2-3-Tape <i>021404049-0008B</i>	Drywall/ Joint Compound	Beige Fibrous Homogeneous	100% Cellulose	0% Non-fibrous (other)	<b>None Detected</b>
WB-2-4-Drywall <i>021404049-0009</i>	Drywall/ Joint Compound	Brown/Gray Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (other)	<b>None Detected</b>
WB-2-4-Joint Compound <i>021404049-0009A</i>	Drywall/ Joint Compound				<b>Stop Positive (Not Analyzed)</b>
WB-2-4-Tape <i>021404049-0009B</i>	Drywall/ Joint Compound	Beige Fibrous Homogeneous	100% Cellulose	0% Non-fibrous (other)	<b>None Detected</b>
WB-2-5-Drywall <i>021404049-0010</i>	Drywall/ Joint Compound	Brown/Gray Fibrous Heterogeneous	5% Cellulose	95% Non-fibrous (other)	<b>None Detected</b>

Analyst(s) \_\_\_\_\_

Nicole Shutts (12)

Scott Combs (24)

Stephen Bennett, Laboratory Manager  
or other approved signatory

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Phone/Fax: (336) 992-1025 / (336) 992-4175

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**Columbia, SC 29205**

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## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
WB-2-5-Joint Compound <i>021404049-0010A</i>	Drywall/ Joint Compound				Stop Positive (Not Analyzed)
WB-2-5-Tape <i>021404049-0010B</i>	Drywall/ Joint Compound	Beige Fibrous Homogeneous	100% Cellulose	0% Non-fibrous (other)	None Detected
WB-3-1-Cove Base <i>021404049-0011</i>	Baseboard/ Adhesive	Gray/Black Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
WB-3-1-Mastic <i>021404049-0011A</i>	Baseboard/ Adhesive	Brown/Gold Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (other)	None Detected
WB-3-2-Cove Base <i>021404049-0012</i>	Baseboard/ Adhesive	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
WB-3-2-Mastic <i>021404049-0012A</i>	Baseboard/ Adhesive	Brown Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
WB-4-1 <i>021404049-0013</i>	Pinhole Ceiling Panels	Gray/Tan/White Fibrous Heterogeneous	50% Cellulose 10% Min. Wool	20% Perlite 20% Non-fibrous (other)	None Detected
WB-4-2 <i>021404049-0014</i>	Pinhole Ceiling Panels	Gray/Tan/White Fibrous Heterogeneous	50% Cellulose 10% Min. Wool	20% Perlite 20% Non-fibrous (other)	None Detected

Analyst(s)

Nicole Shutts (12)

Scott Combs (24)

Stephen Bennett, Laboratory Manager  
or other approved signatory

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Phone/Fax: (336) 992-1025 / (336) 992-4175

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**3112 Divine Street**

**Columbia, SC 29205**

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Project: **E5300.26 ACM Investigation- USC- Williams Brice Stadium Custodial Supply Area Renovation**

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
WB-4-3 021404049-0015	Pinhole Ceiling Panels	Gray/Tan/White Fibrous Heterogeneous	45% Cellulose 10% Min. Wool	20% Perlite 25% Non-fibrous (other)	<b>None Detected</b>
WB-5-1-Skim Coat 021404049-0016	Plaster	White/Beige Non-Fibrous Homogeneous		100% Non-fibrous (other)	<b>None Detected</b>
WB-5-1-Rough Coat 021404049-0016A	Plaster	Gray/Tan/Rust Non-Fibrous Heterogeneous	<1% Cellulose	10% Quartz 90% Non-fibrous (other)	<b>None Detected</b>
WB-5-2-Skim Coat 021404049-0017	Plaster	White/Grayish Non-Fibrous Homogeneous		100% Non-fibrous (other)	<b>None Detected</b>
WB-5-2-Rough Coat 021404049-0017A	Plaster	Brown/Gray/Rust Non-Fibrous Heterogeneous	<1% Cellulose <1% Glass	10% Quartz 90% Non-fibrous (other)	<b>None Detected</b>
WB-5-3-Skim Coat 021404049-0018	Plaster	White Non-Fibrous Homogeneous		30% Ca Carbonate 70% Non-fibrous (other)	<b>None Detected</b>
WB-5-3-Rough Coat 021404049-0018A	Plaster	Gray/Tan Non-Fibrous Homogeneous	<1% Cellulose	10% Quartz 5% Ca Carbonate 85% Non-fibrous (other)	<b>None Detected</b>
WB-6-1 021404049-0019	Carpet Adhesive	Gold/Orange Non-Fibrous Homogeneous	3% Synthetic <1% Cellulose	97% Non-fibrous (other)	<b>None Detected</b>

Analyst(s)

Nicole Shutts (12)

Scott Combs (24)

Stephen Bennett, Laboratory Manager  
or other approved signatory

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Initial report from 07/29/2014 08:49:32

**EMSL Analytical, Inc.**

706 Gralin Street, Kernersville, NC 27284

Phone/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com>[greensborolab@emsl.com](mailto:greensborolab@emsl.com)

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**Columbia, SC 29205**

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Project: **E5300.26 ACM Investigation- USC- Williams Brice Stadium Custodial Supply Area Renovation**

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
WB-6-2 021404049-0020	Carpet Adhesive	Tan/Clear Non-Fibrous Homogeneous	5% Synthetic 1% Cellulose	94% Non-fibrous (other)	None Detected
WB-7-1 021404049-0021	Interior Door Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
WB-7-2 021404049-0022	Interior Door Caulk	White Non-Fibrous Homogeneous		5% Ca Carbonate 95% Non-fibrous (other)	None Detected
WB-8-1 021404049-0023	Paper Backing on Fiber Glass Insulation	Brown/Gray/Black Fibrous Heterogeneous	40% Min. Wool 20% Cellulose	40% Non-fibrous (other)	None Detected
WB-8-2 021404049-0024	Paper Backing on Fiber Glass Insulation	Brown/Tan/Black Fibrous Heterogeneous	65% Cellulose 5% Min. Wool	30% Non-fibrous (other)	None Detected
WB-8-3 021404049-0025	Paper Backing on Fiber Glass Insulation	Brown/Tan/Black Fibrous Heterogeneous	60% Min. Wool 20% Cellulose	20% Non-fibrous (other)	None Detected
WB-9-1 021404049-0026	Exterior Wall Texture	Gray/Beige Non-Fibrous Heterogeneous	<1% Cellulose	97% Non-fibrous (other)	3% Chrysotile
WB-9-2 021404049-0027	Exterior Wall Texture				Stop Positive (Not Analyzed)
WB-9-3 021404049-0028	Exterior Wall Texture				Stop Positive (Not Analyzed)

Analyst(s)

Nicole Shutts (12)

Scott Combs (24)

Stephen Bennett, Laboratory Manager  
or other approved signatory

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Initial report from 07/29/2014 08:49:32





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706 Gralin Street, Kernersville, NC 27284  
Phone/Fax: (336) 992-1025 / (336) 992-4175  
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## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
WB-10-1 <i>021404049-0029</i>	Drywall w/ No Joint Compound	Brown/Gray Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (other)	<b>None Detected</b>
WB-10-2 <i>021404049-0030</i>	Drywall w/ No Joint Compound	Brown/Gray Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (other)	<b>None Detected</b>
WB-10-3 <i>021404049-0031</i>	Drywall w/ No Joint Compound	Brown/Gray Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (other)	<b>None Detected</b>
WB-11-1 <i>021404049-0032</i>	Felt on Exterior Pipe	Brown/Black Fibrous Heterogeneous	75% Cellulose 1% Synthetic	24% Non-fibrous (other)	<b>None Detected</b>
WB-11-2 <i>021404049-0033</i>	Felt on Exterior Wall	Black Fibrous Heterogeneous	70% Cellulose	30% Non-fibrous (other)	<b>None Detected</b>

Analyst(s)  

---

*Nicole Shutts (12)*  
*Scott Combs (24)*

  
Stephen Bennett, Laboratory Manager  
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%  
Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

Initial report from 07/29/2014 08:49:32

**EMSL Analytical, Inc.**

706 Gralin Street, Kernersville, NC 27284  
 Phone/Fax: (336) 992-1025 / (336) 992-4175  
<http://www.EMSL.com> [greensborolab@emsl.com](mailto:greensborolab@emsl.com)

EMSL Order: 021404049  
 CustomerID: FMEC62  
 CustomerPO: E5300.26  
 ProjectID:

Attn: **Glynn Ellen**  
**F & ME Consultants**  
**3112 Divine Street**  
  
**Columbia, SC 29205**

Phone: (803) 254-4540  
 Fax: (803) 254-4542  
 Received: 07/24/14 10:00 AM  
 Analysis Date: 7/30/2014  
 Collected:

Project: **E5300.26 ACM Investigation- USC- Williams Brice Stadium Custodial Supply Area Renovation**

**Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM  
 via EPA/600/R-93/116 Section 2.5.5.1**

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
WB-3-3 <i>021404049-0034</i>	Baseboard/ Adhesive	Black Non-Fibrous Homogeneous	100	None	No Asbestos Detected
WB-3-3A <i>021404049-0035</i>	Baseboard/ Adhesive	Brown/Black Non-Fibrous Homogeneous	100	None	No Asbestos Detected
WB-6-3 <i>021404049-0036</i>	Carpet Adhesive	Red Fibrous Heterogeneous	100	None	No Asbestos Detected
WB-7-3 <i>021404049-0037</i>	Interior Door Caulk	White Non-Fibrous Homogeneous	100	None	No Asbestos Detected
WB-11-3 <i>021404049-0038</i>	Felt on Exterior Wall	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected

Analyst(s) \_\_\_\_\_  
 Stephen Bennett (5)

  
 Stephen Bennett, Laboratory Manager  
 or other approved signatory

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.  
 Samples analyzed by EMSL Analytical, Inc. Kernersville, NC

Initial report from 07/30/2014 16:07:17

# Chain of Custody

EMSL Analytical, Inc.  
706 Gralin Street  
Kernersville, NC 27284

## Asbestos Lab Services

Phone: (336) 992-1025  
Fax: (336) 992-4175  
<http://www.emsl.com>

Please print all information legibly.

4049

<b>Company:</b>	F&ME Consultants	<b>Bill To:</b>	F&ME Consultants
<b>Address1:</b>	3112 Devine Street	<b>Address1:</b>	P.O. Box 5855
<b>Address2:</b>		<b>Address2:</b>	
<b>City, State:</b>	Columbia, South Carolina	<b>City, State:</b>	Columbia, South Carolina
<b>Zip/Post Code:</b>	29205	<b>Zip/Post Code:</b>	29250
<b>Country:</b>	USA	<b>Country:</b>	USA
<b>Contact Name:</b>	Glynn Ellen	<b>Attn:</b>	Jim Kelleher
<b>Phone:</b>	803 254-4540	<b>Phone:</b>	803 777-1208
<b>Fax:</b>	803 254-4542	<b>Fax:</b>	803 777-1028
<b>Email:</b>	mmincey@fmecon.com; jshannon@fmecon.com	<b>Email:</b>	jkelleher@fmecon.com
<b>EMSL Rep:</b>	Jason McDonald	<b>P.O. Numbers:</b>	E5300.26
<b>Project Name/Number:</b>	E5300.26 ACM Investigation – USC – Williams-Brice Stadium Custodial Supply Area Renovation		

MATRIX			TURNAROUND			
<input type="checkbox"/> Air	<input type="checkbox"/> Soil	<input type="checkbox"/> Micro-Vac	<input type="checkbox"/> 3 Hours	<input type="checkbox"/> 6 Hours	<input type="checkbox"/> Same Day or 12 Hours*	<input type="checkbox"/> 24 Hours (1day)
<input checked="" type="checkbox"/> Bulk	<input type="checkbox"/> Drinking Water		<input type="checkbox"/> 48 Hours (2 days)	<input checked="" type="checkbox"/> 72 Hours (3 days)	<input type="checkbox"/> 96 Hours (4 days)	<input checked="" type="checkbox"/> 120 Hours (5 days)
<input type="checkbox"/> Wipe	<input type="checkbox"/> Wastewater		<input type="checkbox"/> 144+ hours (6-10 days)			

TEM AIR, 3 hours, 6 hours, Please call ahead to schedule. There is a premium charge for 3-hour tat, please call 1-800-220-3675 for price prior to sending samples. You will be asked to sign an authorization form for this service.  
\*12 hours (must arrive by 11:00a.m. Mon -Fri.), Please Refer to Price Quote

PCM - Air	TEM Air	TEM WATER
<input type="checkbox"/> NIOSH 7400(A) Issue 2: August 1994	<input type="checkbox"/> AHERA 40 CFR, Part 763 Subpart E	<input type="checkbox"/> EPA 100.1
<input type="checkbox"/> OSHA w/TWA	<input type="checkbox"/> NIOSH 7402	<input type="checkbox"/> EPA 100.2
<input type="checkbox"/> Other:	<input type="checkbox"/> EPA Level II	<input type="checkbox"/> NYS 198.2
PLM - Bulk	TEM BULK	TEM Microvac/Wipe
<input checked="" type="checkbox"/> EPA 600/R-93/116	<input type="checkbox"/> Drop Mount (Qualitative)	<input type="checkbox"/> ASTM D 5755-95 (quantative method)
<input type="checkbox"/> EPA Point Count	<input type="checkbox"/> Chatfield SOP - 1988-02	<input type="checkbox"/> Wipe Qualitative
<input type="checkbox"/> NY Stratified Point Count	<input checked="" type="checkbox"/> TEM NOB (Gravimetric) NYS 198.4	
<input type="checkbox"/> PLM NOB (Gravimetric) NYS 198.1	<input type="checkbox"/> EMSL Standard Addition:	<b>XRD</b>
<input type="checkbox"/> NIOSH 9002:		<input type="checkbox"/> Asbestos
<input type="checkbox"/> EMSL Standard Addition:	<b>PLM Soil</b>	<input type="checkbox"/> Silica NIOSH 7500
SEM Air or Bulk	<input type="checkbox"/> EPA Protocol Qualitative	
<input type="checkbox"/> Qualitative	<input type="checkbox"/> EPA Protocol Quantitative	<b>OTHER</b>
<input type="checkbox"/> Quantitative	<input type="checkbox"/> EMSL MSD 9000 Method fibers/gram	

4049

# Chain of Custody

EMSL Analytical, Inc.  
706 Gralin Street  
Kernersville, NC 27284

## Asbestos Lab Services

Phone: (336) 992-1025  
Fax: (336) 992-4175  
<http://www.emsl.com>

Please print all information legibly.

Client Sample # WB-1-1 to WB-11-3

Total Samples #: 37

Relinquished: Mike Mincey *Mike Mincey* Date: 07/23/2014

Time: 17:00

Received: SF Date: 7/24/14

Time: 10:00

Relinquished: \_\_\_\_\_ Date: \_\_\_\_\_

Time: \_\_\_\_\_

Received: \_\_\_\_\_ Date: \_\_\_\_\_

Time: \_\_\_\_\_

**NOTE: FIRST POSITIVE STOP PROTOCOL. ALSO, FOR SAMPLES DENOTED WITH AN ASTERICK (\*), IF THE FIRST TWO SAMPLES' RESULTS ARE NEGATIVE, RUN LAST SAMPLE AS TEM BULK FOR NEGATIVE CONFIRMATION. SOUTH CAROLINA GUIDELINES.**

SAMPLE NUMBER	SAMPLE DESCRIPTION/LOCATION	VOLUME (if applicable)
1	WB-1-1	Spray-Applied Ceiling Texture
2	WB-1-2	Spray-Applied Ceiling Texture
3	WB-1-3	Spray-Applied Ceiling Texture
4	WB-1-4	Spray-Applied Ceiling Texture
5	WB-1-5	Spray-Applied Ceiling Texture
6	WB-2-1	Drywall/Joint Compound
7	WB-2-2	Drywall/Joint Compound
8	WB-2-3	Drywall/Joint Compound
9	WB-2-4	Drywall/Joint Compound
10	WB-2-5	Drywall/Joint Compound
11	WB-3-1	Baseboard & Adhesive
12	WB-3-2	Baseboard & Adhesive
13	*WB-3-3	Baseboard & Adhesive
14	WB-4-1	2' x 4' Small/Large Pinhole Ceiling Panels
15	WB-4-2	2' x 4' Small/Large Pinhole Ceiling Panels
16	WB-4-3	2' x 4' Small/Large Pinhole Ceiling Panels
17	WB-5-1	Plaster (Both Coats)
18	WB-5-2	Plaster (Both Coats)
19	WB-5-3	Plaster (Both Coats)
20	WB-6-1	Gold Carpet Adhesive Only
21	WB-6-2	Gold Carpet Adhesive Only
22	*WB-6-3	Gold Carpet Adhesive Only
23	WB-7-1	White Interior Door Caulk
24	WB-7-2	White Interior Door Caulk
25	*WB-7-3	White Interior Door Caulk

9049

26	WB-8-1	Paper Backing on Fiberglass Insulation	
27	WB-8-2	Paper Backing on Fiberglass Insulation	
28	WB-8-3	Paper Backing on Fiberglass Insulation	
29	WB-9-1	Exterior Wall Texture	
30	WB-9-2	Exterior Wall Texture	
31	WB-9-3	Exterior Wall Texture	
32	WB-10-1	Drywall w/No Joint Compound	
33	WB-10-2	Drywall w/No Joint Compound	
34	WB-10-3	Drywall w/No Joint Compound	
35	WB-11-1	Felt on Exterior Pipe	
36	WB-11-2	Felt on Exterior Wall	
37	*WB-11-3	Felt on Exterior Pipe	
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## **APPENDIX C**

Personnel Certifications



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# SCDHEC ISSUED

## Asbestos ID Card

---

Michael Mincey



CONSULTMP  
AIRSAMPLER  
SUPERHERA

Expires  
NP-00161 02/25/15  
AS-00272 02/24/15  
SA-01424 02/24/15



**SCDHEC ISSUED**  
**Asbestos ID Card**

Glynn M Ellen



SUPERAHERA  
CONSULTMP  
AIRSAMPLER  
CONSULTPD

Expires

SA-00485 02/24/15  
ASB-22641 02/25/15  
AS-00079 02/24/15  
PD-00098 06/12/15

## **APPENDIX D**

SCDHEC Regulation Summary  
SCDHEC Abatement Project Forms



## **Air Quality**

### **Asbestos - Regulatory Information**

#### **RENOVATIONS & DEMOLITIONS**

Note: This information should serve as a guide only and is not intended to replace the regulations. For additional information concerning DHEC and EPA regulations, contact DHEC's Asbestos Section at (803) 898-4289. Information regarding the OSHA asbestos standards may be obtained from the South Carolina Department of Labor, Licensing and Regulation at (803) 734-9669.

#### **APPLICABILITY**

Renovation and demolition of most facilities, including buildings, structures, and other installations, are subject to State and Federal asbestos regulations. Certain residential buildings may be exempt unless the property was used in the past for non-residential purposes (contact the Asbestos Section for additional information) or is part of a larger development such as highway right-of-way, mall development, urban renewal or other type of similar development. The facility owner and the renovation or demolition contractor are both responsible for ensuring compliance with these regulations.

#### **DEFINITIONS**

**Renovation** means altering a facility or one or more facility components in any way, including the stripping or removal of regulated asbestos-containing material (RACM) from a facility component. "Remodeling" is considered renovation.

**Demolition** is the wrecking or taking out of any load-supporting structural member of a facility and any related handling operations. Structural burns are prohibited by State Open Burning Regulations.

#### **INSPECTION FOR ASBESTOS**

Before a facility or a portion of a facility is renovated or demolished, the owner/operator of the facility or renovation or demolition activity must ensure that the facility or portion of the facility being renovated or demolished has been thoroughly inspected for the presence of asbestos. The inspection must be performed by a person who has been trained and licensed as an Asbestos Building Inspector or management planner in accordance with State training and licensing requirements.

The inspector must identify, quantify, and assess the condition of all suspect asbestos-containing materials, either friable or non-friable, on interior and exterior portions of the facility. The inspector must also comply with the procedures specified in 40 CFR 763.86 in determining sampling locations and the number of representative samples to be collected. In addition, the

inspector is required to prepare a written report detailing the findings of the inspection. At a minimum, the report must include information required in 40 CFR 763.85 (a)(4)(vi)(A)-(E), as well as the date of inspection and the name, license number, and signature of the licensed Asbestos Building Inspector or Management Planner who performed the inspection and completed the report. A legible copy of the building inspection report must be provided to the Department prior to each demolition, and upon request for renovations. **(Note: "BUILDING INSPECTIONS" can be consulted for a detailed explanation of the aforementioned sampling and reporting protocols.)**

A building inspection will only be acceptable if performed **within three years** prior to the demolition or renovation. If an inspection report is more than three years old, then it must be confirmed and verified by a licensed Asbestos Building Inspector or Management Planner.-

### **FRIABLE ASBESTOS-CONTAINING MATERIALS**

If friable asbestos-containing materials (e.g., pipe insulation) are present, they must be removed prior to being disturbed during renovation or demolition activities. Removal (abatement) must be performed by trained, licensed persons using procedures detailed in State and Federal regulations.

A project design must be prepared for each asbestos abatement project involving the abatement of greater than 3,000 square feet, 1,500 linear feet and/or 656 cubic feet of RACM in a facility to be reoccupied. Such designs must be prepared by a person licensed by the Department as an Asbestos Project Designer.

### **NON-FRIABLE ASBESTOS-CONTAINING MATERIALS**

During renovations, removal of non-friable materials (e.g., vinyl-asbestos floor tiles and sheet flooring, mastics, asphaltic roofing, and asbestos-cement siding and roofing tiles) may be regulated. Applicability is dependent upon the removal methods to be used. If it can be anticipated that non-friable materials will be ground, crumbled, sanded, abraded, chipped or pulverized, the removal is subject to the same rules as removal of friable materials.

Prior to any demolition, non-friable asbestos-cement products (e.g., transite siding, exterior siding and roofing shingles) must be removed. Asbestos-containing sheet flooring and floor tiles, as well as asphaltic roofing products, need not be removed if they are in good condition and have not become brittle and are not peeling, cracking, or crumbling. Otherwise, they must also be removed prior to demolition. If it can be anticipated that non-friable materials will be ground, crumbled, sanded, abraded, chipped or pulverized, the materials must be removed and the removal is subject to the same rules as removal of friable materials. The amount of any non-friable asbestos that will remain in place during demolition must also be indicated on the written notification form.

***All asbestos-containing materials must be removed if the facility will be demolished by non-standard demolition techniques such as implosion, explosion, or intentional burning.***

## **NOTIFICATION FOR RENOVATIONS AND DEMOLITIONS**

Prior to removing regulated asbestos-containing materials, written notification must be submitted to the Department (up to 10 working days in advance, depending on the amount of asbestos to be removed). The notification must include certain required items of information about the owner, the contractor, the facility, and the asbestos removal project. Required fees must be submitted along with the notification. You must obtain a permit from the Department prior to the renovation activity.

Prior to the demolition of any regulated facility, written notification must be submitted to the Department *at least 10 working days* in advance **even if a building inspector determines that asbestos is not present at the facility**. The notification must include certain required items of information about the owner, the contractor, the facility, and the demolition project. Required fees and a copy of the building inspector's report must be submitted along with the notification of demolition. You must obtain a permit from the Department prior to the demolition activity.

## **DISPOSAL**

*Never burn any asbestos-containing waste material.*

Non-asbestos-containing demolition debris and debris which contains only non-regulated roofing or flooring may be disposed of at a DHEC-approved disposal site for cellulosic or inert waste. Waste consolidation activities involving grinding, cutting, or compacting of non-friable asbestos-containing materials will subject these materials to more stringent State and Federal asbestos disposal regulations.

Regulated asbestos waste must be handled by properly licensed asbestos abatement personnel and disposed of at a landfill permitted to accept regulated asbestos waste. A list of approved landfills may be obtained from the Asbestos Section.

## **REGULATORY REQUIREMENTS FOR BUILDING INSPECTION**

As required by the National Emission Standard for Hazardous Air Pollutants (NESHAP) and SCDHEC Regulation 61-86.1, an owner/operator shall ensure that a building inspection to detect the presence of asbestos-containing materials (ACM) has been performed prior to any renovation or demolition activity at a regulated facility.

Under SCDHEC Regulation 61-86.1, Section VI.A.6., an inspection cannot have been performed more than three years prior to a renovation or demolition activity. If more than three years have elapsed since the most recent inspection, the previous inspection shall be confirmed and verified by a licensed building inspector and/or management planner.

SCDHEC Regulation 61-86.1 requires that all inspections be performed by persons trained and licensed as either a building inspector and/or management planner. In order to be licensed in these disciplines, persons must have successfully completed a Department approved initial training course specific to inspecting for ACM in a building and/or a course specific to

management planning for ACM in a building. Persons must also have taken and passed an examination at the end of the course with a score of 70 percent or above.

In performing inspections, SCDHEC Regulation 61-86.1 requires that a building inspector and/or management planner comply with the requirements of Section VI, Asbestos Building Inspection Requirements. An inspection shall include samples from suspect friable and non-friable ACM on interior and exterior portions of a facility or its facility components.

In performing inspections, SCDHEC Regulation 61-86.1 requires that a building inspector and/or management planner follow specific sampling procedures. According to Section IV.B.3.a of the regulation, a building inspector and/or management planner shall comply with the procedures specified in **40 CFR 763.86** in determining sampling locations and the number of representative samples to be collected. An inspection shall include samples from suspect friable and non-friable ACM on interior and exterior portions of a facility or its facility components.

Under 40 CFR Part 763.86, suspect ACM are divided into three categories: surfacing materials, thermal system insulation (commonly referred to as TSI), and miscellaneous materials. SCDHEC Regulation 61-86.1, Section VI contains sampling procedures specific to each category of material.

**Surfacing material** includes, but is not limited to, joint compound, plaster, and painted, troweled on, or spray-applied textured material. To remain in compliance with SCDHEC Regulation 61-86.1, surfacing materials on exterior and interior portions of a facility shall be sampled according to procedures outlined in SCDHEC Regulation 61-86.1, Section VI.D.1. (a)-(c):

- A licensed asbestos inspector shall collect, in a statistically random manner, a minimum of three bulk samples from each homogeneous area of any surfacing that is not assumed to be ACM, and shall collect the samples as follows:
  - At least three bulk samples shall be collected from each homogeneous area that is 1,000 or fewer square feet (sf) or linear feet (Lf) in size.
  - At least five bulk samples shall be collected from each homogeneous area that is greater than 1,000 but fewer than or equal to 5,000 sf or Lf.
  - At least seven bulk samples shall be collected from each homogeneous area that is greater than 5,000 sf or Lf.

**Thermal system insulation (TSI)** is any material that is applied to pipes, fittings, boilers, breeching, tanks, ducts, or other facility components for the purpose of preventing heat loss or gain, water condensation, or for other purposes. **Miscellaneous Material** is any material that is not considered a surfacing material or thermal system insulation and includes, but is not limited to, flooring, roofing, mastics, gaskets, cementitious materials, caulking, ceiling tiles, fire doors, wall boards, and flexible duct connections. To remain in compliance with SCDHEC Regulation 61-86.1, TSI and miscellaneous materials on exterior and interior portions of a facility shall be sampled in accordance with procedures outlined in SCDHEC Regulation 61-86.1, Section VI.D.2:

- A licensed asbestos inspector shall collect, in a statistically random manner, at least three bulk samples from each homogeneous area of TSI and any miscellaneous material that is not assumed to be ACM.
- In accordance with ASTM E2356, and any subsequent amendments and editions, negative results for non-friable organically bound materials (NOB) shall be verified with at least one TEM analysis.
- NOBs include flooring, roofing, mastics, adhesives, caulks, and glazing.
- If an accredited inspector has determined the thermal system insulation to be fiberglass, foam glass, rubber, or other non-suspect material, then bulk samples are not required.

**SCDHEC Regulation 61-86.1, Section VI.C requires that a building inspector and/or management planner prepare a written asbestos building inspection report to include the following:**

- A title page denoting: (1) The client's name, company, address, and telephone number, and the name and exact location of the facility inspected; (2) the date the inspection was performed; (3) the date the inspection report was written; and (4) the printed name and telephone number of the inspector(s), and his or her affiliated company name, address, and telephone number.
- A cover letter to the building owner or owner's representative that describes the purpose of the inspection; a general synopsis of the inspection and results; and the name, title, and signature of the inspector(s) and report writer, if different.
- A detailed narrative of the physical description of the building or part of the building affected by the renovation or demolition operation that includes: (1) The square footage of the building or part of the building affected by the renovation or demolition operation; (2) The building materials used in the construction of the exterior, roof, interior, and basement or crawlspace of the building affected by the demolition or affected by the renovation materials operation; (3) An estimated or exact quantity (square or linear feet) for all suspect materials whether sampled for or assumed to be asbestos that may be affected by the renovation or demolition operation; (4) Also include a description of non-suspect materials excluding: glass, metals, kiln brick, cement, fiberglass, concrete, pressed wood, cinder block, and rubber.
- An executive summary that details: (1) The type of suspect ACM (e.g., TSI, floor tile, mastic), total square or linear footage, and the total number of samples collected for each separate homogenous area affected by the renovation or demolition operation; (2) The date of the inspection, type, condition, quantity, sample results, and exact location of ACM positively identified or assumed to be ACM in the part of the building affected by the renovation or demolition operation; (3) A list of the homogeneous areas identified; (4) Whether the material is accessible for the building or part of the building affected by the renovation or demolition operation; and (5) The material's potential for disturbance for the building or part of the building affected by the renovation or demolition operation.
- For renovation and demolition operations, the inspector's determination that ACM is friable or non-friable.
- Except when suspect ACM materials are assumed to be asbestos, include a complete, clear, legible copy of all laboratory bulk sample results.



- Clear, legible drawings and/or photographs to clarify the scope of the renovation or demolition operation. Illustrate the exact location of each sample collected. For facilities that involve a trade secret or confidential component or an affected area process, a request for a variance may be submitted.
- The printed name and signature of each accredited inspector who collected the samples, and a clear legible copy of his or her Department issued asbestos building inspector or management planner license



**ASBESTOS ABATEMENT PROJECT LICENSE APPLICATION**  
 BUREAU OF AIR QUALITY • ASBESTOS SECTION • 2600 BULL STREET • COLUMBIA • SC • 29201

TYPE OF OPERATION:  Standard Removal  Emergency Removal  Enclosure  Encapsulation  Cleanup  Disposal

FOR OFFICE USE Postmark/Received: _____	Original <input type="checkbox"/> / Revised <input type="checkbox"/> / Cancellation <input type="checkbox"/> (check one)	Project License I.D. (For Revisions/Cancellations): _____
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I. FACILITY OWNER: \_\_\_\_\_  
 MAILING ADDRESS: \_\_\_\_\_  
 CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_  
 CONTACT PERSON: \_\_\_\_\_ PHONE: (\_\_\_\_) \_\_\_\_\_

II. REMOVAL CONTRACTOR: \_\_\_\_\_  
 MAILING ADDRESS: \_\_\_\_\_  
 CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_  
 CONTACT PERSON: \_\_\_\_\_ PHONE: (\_\_\_\_) \_\_\_\_\_  
 E-MAIL ADDRESS: \_\_\_\_\_ E-MAIL PERMIT  OR MAIL PERMIT   
 FEDERAL I.D. NUMBER: \_\_\_\_\_  
 DHEC CONTRACTOR LICENSE NO. (If applicable): \_\_\_\_\_ EXPIRATION DATE: \_\_\_\_\_

III. FACILITY NAME: \_\_\_\_\_  
 STREET ADDRESS: \_\_\_\_\_  
 CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ COUNTY: \_\_\_\_\_  
 SITE (ROOM, FLOOR, WING, UNIT, MACHINE, ETC.): \_\_\_\_\_  
 BUILDING SIZE: \_\_\_\_\_ NO. OF FLOORS: \_\_\_\_\_ AGE IN YEARS: \_\_\_\_\_  
 PRESENT USE: \_\_\_\_\_ PRIOR USE: \_\_\_\_\_ FUTURE USE: \_\_\_\_\_

IV. PROCEDURES, INCLUDING ANALYTICAL METHOD IF APPROPRIATE, USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:  
 FACILITY OR FACILITY COMPONENT SURVEYED BY (INSPECTOR NAME): \_\_\_\_\_  
 COMPANY: \_\_\_\_\_ PHONE: (\_\_\_\_) \_\_\_\_\_  
 DHEC LICENSE NUMBER: \_\_\_\_\_ EXPIRATION DATE: \_\_\_\_\_

V. PROJECT DESIGN PERFORMED BY (IF APPLICABLE): \_\_\_\_\_  
 COMPANY: \_\_\_\_\_ PHONE: (\_\_\_\_) \_\_\_\_\_  
 DHEC LICENSE NUMBER: \_\_\_\_\_ EXPIRATION DATE: \_\_\_\_\_

VI. ASBESTOS-CONTAINING MATERIALS (ACM) **TO BE REMOVED ONLY:**

TYPE (TSI, SURFACING, FLOORING, ROOFING, ETC.)	AMOUNT (SQUARE FEET, LINEAR FEET, CUBIC FEET)	CONDITION (CIRCLE ONE)
		<input type="checkbox"/> FRIABLE <input type="checkbox"/> NON-FRIABLE
		<input type="checkbox"/> FRIABLE <input type="checkbox"/> NON-FRIABLE
		<input type="checkbox"/> FRIABLE <input type="checkbox"/> NON-FRIABLE
		<input type="checkbox"/> FRIABLE <input type="checkbox"/> NON-FRIABLE

VII. SCHEDULED DATES OF REMOVAL: START DATE: \_\_\_\_\_ COMPLETION DATE: \_\_\_\_\_  
 WORK DAYS: \_\_\_\_\_ WORK HOURS: \_\_\_\_\_

<p><b>APPLICATIONS MUST BE SUBMITTED WITH FEES PRIOR TO THE SCHEDULED START DATE AS FOLLOWS:</b></p> <p>NESHAP PROJECTS: 10 WORKING DAYS          SMALL PROJECTS: 4 WORKING DAYS          MINOR PROJECTS: 2 WORKING DAYS</p> <p>Non-Friable (NESAP-sized) Projects: 4 working days. No fee for non-friable ACM.</p> <p>For additional information concerning regulatory requirements call or visit our Web site at <a href="http://www.scdhec.gov/environment/baq/asbestos.aspx">http://www.scdhec.gov/environment/baq/asbestos.aspx</a></p>	<p><b>FEE SCHEDULE FOR FRIABLE ASBESTOS-CONTAINING MATERIALS:</b></p> <p>10 CENTS PER SQUARE FOOT OR LINEAR FOOT          MINIMUM FEE OF \$25.00          MAXIMUM FEE OF \$1000.00</p>
--	--

VIII. DESCRIPTION OF PLANNED ABATEMENT WORK & METHOD(S) TO BE USED:

IX. DESCRIPTION OF WORK PRACTICES & ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE RENOVATION SITE:

X. WASTE TRANSPORTER #1: \_\_\_\_\_

MAILING ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_ PHONE: (\_\_\_\_\_) \_\_\_\_\_

-----  
WASTE TRANSPORTER #2: \_\_\_\_\_

MAILING ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_ PHONE: (\_\_\_\_\_) \_\_\_\_\_

XI. WASTE DISPOSAL SITE: \_\_\_\_\_

MAILING ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_ PHONE: (\_\_\_\_\_) \_\_\_\_\_

TEMPORARY ASBESTOS STORAGE CONTAINMENT AREA LICENSE NUMBER (IF APPLICABLE): \_\_\_\_\_

XII. DESCRIPTION OF EMERGENCY REMOVAL (PLEASE ATTACH A LETTER FROM THE FACILITY OWNER EXPLAINING THE NATURE OF THE EMERGENCY)

DATE & HOUR OF EMERGENCY (MM/DD/YY): \_\_\_\_\_

DESCRIPTION OF SUDDEN, UNEXPECTED EVENT:

EXPLANATION OF HOW THE EVENT CAUSED UNSAFE CONDITIONS AND/OR WOULD CAUSE EQUIPMENT DAMAGE AND/OR AN UNREASONABLE FINANCIAL BURDEN:

XIII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NON-FRIABLE ASBESTOS MATERIAL BECOMES CRUMBLD, PULVERIZED OR REDUCED TO POWDER:

XIV. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF REGULATION (40 CFR PART 61, SUBPART M) WILL BE ON-SITE DURING THE RENOVATION AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

\_\_\_\_\_  
(SIGNATURE OF OWNER/OPERATOR)

\_\_\_\_\_  
(DATE)

XIV. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT.

\_\_\_\_\_  
(SIGNATURE OF OWNER/OPERATOR)

\_\_\_\_\_  
(DATE)



## DEMOLITION LICENSE APPLICATION

BUREAU OF AIR QUALITY • ASBESTOS SECTION • 2600 BULL STREET • COLUMBIA • SC • 29201

TYPE OF OPERATION:  Total Demolition  Partial Demolition  Ordered Demolition

**FOR OFFICE USE**

Postmark/Received: \_\_\_\_\_

Original/Revised/Cancellation (circle one)

Project License I.D. (For Revisions/Cancellations): \_\_\_\_\_

I. FACILITY OWNER: \_\_\_\_\_  
 MAILING ADDRESS: \_\_\_\_\_  
 CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_  
 CONTACT PERSON: \_\_\_\_\_ PHONE: (\_\_\_\_) \_\_\_\_\_

II. IS ASBESTOS PRESENT IN THE FACILITY?: YES  / NO  (check one)

III. DEMOLITION CONTRACTOR: \_\_\_\_\_ FEDERAL ID NO.: \_\_\_\_\_  
 MAILING ADDRESS: \_\_\_\_\_  
 CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_  
 CONTACT PERSON: \_\_\_\_\_ PHONE: (\_\_\_\_) \_\_\_\_\_  
 E-MAIL ADDRESS: \_\_\_\_\_ E-MAIL PERMIT  OR MAIL PERMIT   
 FEDERAL I.D. NUMBER: \_\_\_\_\_  
 ASBESTOS REMOVAL CONTRACTOR (If applicable): \_\_\_\_\_  
 MAILING ADDRESS: \_\_\_\_\_  
 CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_  
 CONTACT PERSON: \_\_\_\_\_ PHONE: (\_\_\_\_) \_\_\_\_\_

IV. FACILITY NAME: \_\_\_\_\_  
 STREET ADDRESS: \_\_\_\_\_  
 CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ COUNTY: \_\_\_\_\_  
 SITE (ROOM, FLOOR, WING, UNIT, MACHINE, ETC.): \_\_\_\_\_  
 BUILDING SIZE: \_\_\_\_\_ NO. OF FLOORS: \_\_\_\_\_ AGE IN YEARS: \_\_\_\_\_  
 PRESENT USE: \_\_\_\_\_ PRIOR USE: \_\_\_\_\_ FUTURE USE: \_\_\_\_\_

V. PROCEDURES, INCLUDING ANALYTICAL METHOD IF APPROPRIATE, USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:  
 FACILITY OR FACILITY COMPONENT SURVEYED BY (INSPECTOR NAME): \_\_\_\_\_  
 COMPANY: \_\_\_\_\_ PHONE: (\_\_\_\_) \_\_\_\_\_  
 DHEC LICENSE NUMBER: \_\_\_\_\_ EXPIRATION DATE: \_\_\_\_\_

VI. NON-FRIABLE MASTIC, GLUE, AND ADHESIVE ASBESTOS-CONTAINING MATERIALS **REMAINING IN PLACE DURING DEMOLITION** (IF APPLICABLE):

TYPE (MASTIC, GLUE, AND ADHESIVE)	AMOUNT (SQUARE FEET)

VII. SCHEDULED DATES OF DEMOLITION (YOU MUST SPECIFY DATES):  
 START DATE: \_\_\_\_\_ COMPLETION DATE: \_\_\_\_\_  
 WORK DAYS: \_\_\_\_\_ WORK HOURS: \_\_\_\_\_

- **Applications must be mailed along with a \$50.00 fee (payable to SCDHEC) at least 10 working days prior to the scheduled start date. Faxes will not be accepted.**
- **A copy of an asbestos survey report (no older than 3 years) must accompany the application.**

For additional information concerning regulatory requirements call or visit our Web site at <http://www.scdhec.gov/environment/baq/asbestos.aspx>

VIII. DESCRIPTION OF PLANNED DEMOLITION METHOD(S) TO BE USED:

BULLDOZER       LOADER       WRECKING BALL       MANUAL       BURNING       IMPLOSION/EXPLOSION

IF OTHER PLEASE DESCRIBE:

IX. DESCRIPTION OF WORK PRACTICES & ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION SITE:

X. WASTE TRANSPORTER #1: \_\_\_\_\_

MAILING ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_ PHONE: ( \_\_\_\_\_ ) \_\_\_\_\_

WASTE TRANSPORTER #2: \_\_\_\_\_

MAILING ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_ PHONE: ( \_\_\_\_\_ ) \_\_\_\_\_

XI. WASTE DISPOSAL SITE: \_\_\_\_\_

MAILING ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_ PHONE: ( \_\_\_\_\_ ) \_\_\_\_\_

XII. IF DEMOLITION ORDERED BY GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW: (PLEASE ATTACH A COPY OF THE ORDER)

NAME: \_\_\_\_\_ TITLE: \_\_\_\_\_

AUTHORITY: \_\_\_\_\_

DATE OF ORDER (MM/DD/YY): \_\_\_\_\_ DATE ORDERED TO BEGIN(MM/DD/YY): \_\_\_\_\_

XIII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASBESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XIV. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF REGULATION (40 CFR PART 61, SUBPART M) WILL BE ON-SITE DURING THE DEMOLITION INVOLVING RACM AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

\_\_\_\_\_  
(SIGNATURE OF OWNER/OPERATOR)

\_\_\_\_\_  
(DATE)

XV. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT.

\_\_\_\_\_  
(SIGNATURE OF OWNER/OPERATOR)

\_\_\_\_\_  
(DATE)

- **Applications must be mailed along with a \$50.00 fee (payable to SCDHEC) at least 10 working days prior to the scheduled start date. Faxes will not be accepted.**
- **A copy of an asbestos survey report (no older than 3 years) must accompany the application.**

For additional information concerning regulatory requirements call or visit our Web site at <http://www.scdhec.gov/environment/baq/asbestos.aspx>





**LEAD-BASED PAINT  
INVESTIGATION**

**WILLIAMS-BRICE STADIUM  
CUSTODIAL SUPPLY AREA  
1125 GEORGE ROGERS BLVD.  
COLUMBIA, SOUTH CAROLINA**

**PREPARED FOR:**



**UNIVERSITY OF  
SOUTH CAROLINA**

University of South Carolina  
743 Green Street  
Columbia, South Carolina 29208

**PREPARED BY:**

F&ME Consultants  
3112 Devine Street  
Columbia, South Carolina 29205  
(803) 254-4540

**August 8, 2014**

**E5300.260**





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### APPENDIX A

Site Vicinity Map (Figure 1)

General Building Plan (Figure 2)

XRF Data (Table I)

Photographs of Positive Lead-Based Paint Items

### APPENDIX B

Personnel Certification



## I. EXECUTIVE SUMMARY

As requested, F&ME Consultants has completed a Lead-Based Paint (LBP) investigation of the William-Brice Stadium custodial supply area located at 1125 George Rogers Blvd. in Columbia, South Carolina. This investigation was performed on July 27, 2014.

It is our understanding that the objective of this investigation was to identify and assess the suspect interior and exterior LBP painted and/or coated building components that may be impacted by the planned renovation project for the custodial supply area of the subject structure. This scope includes both a visual evaluation of the physical condition of painted materials as well as quantitative testing of random surfaces using a Thermo Scientific Niton X-Ray Fluorescence (XRF) Portable Analyzer. The XRF documents the concentration of lead, if any, in the overall paint or coating. Building components were scanned with the XRF with a limit of detection (LOD) of 0.01 mg/cm<sup>2</sup>.

LBP is governed by multiple regulatory agencies, and each requires different response actions when the concentration of lead exceeds specified thresholds. The Occupational Safety and Health Administration (OSHA) regulates worker exposure to lead dust, and as a result considers materials with any lead content to be a potential hazard. Furthermore, the SC Department of Health and Environmental Control (SCDHEC) requires some materials found to contain  $\geq 0.7$  mg/cm<sup>2</sup> lead to be disposed of at specialized waste facilities. In an effort to present the data in a user-friendly format, we have highlighted the XRF results depending upon which threshold is exceeded. Items in red text exceed the SCDHEC threshold, while items in blue text contain lead in concentrations between 0.01 to  $<0.7$  mg/cm<sup>2</sup> and would therefore be a concern under OSHA's regulations.

The results from the XRF quantitative testing indicate that lead is present in paint and/or coatings in concentrations  $\geq 0.7$  mg/cm<sup>2</sup> on the following components:

- Maroon-painted lower half of south exterior cinder block wall, columns, and column pedestals
- Original wooden tongue-n-groove ceiling above existing textured drywall ceiling in supply area #5
- White-painted structural steel column and angle-iron bracing
- Yellow ceramic wall tile in bathroom by urinal
- White-painted structural beam in shower
- Grey-painted wooden wall/gable and joist on top of existing structure from previous structure

Other components were also found to contain lead in concentrations between 0.01 to  $<0.7$  mg/cm<sup>2</sup>. The XRF test results are organized in Table I, which includes the location, description

and type of building material from which the readings were taken. The General Building Plan (Figure 2) includes the structure's layout, as well as the "side" designations as listed in Table I.

We sincerely appreciate the opportunity to assist you with this project. If you have any questions or require any additional information, please do not hesitate to contact our office at (803) 254-4540.

Sincerely,

F&ME CONSULTANTS



Jeffrey S. Leary  
S.C. Lead-Based Paint Inspector  
EPA Cert. No. SC-I-18721-2 (Exp. 07/29/15)



Glynn M. Ellen  
Senior Environmental Professional

## II. LBP BACKGROUND INFORMATION

Housing and Urban Development (HUD) defines “lead-based paint” as any coating that has a lead concentration of 1.0 milligrams of lead per square centimeter (1.0 mg/cm<sup>2</sup>) or greater, or if the lead concentration is greater than 0.5% by weight. The Consumer Product Safety Commission (CPSC) currently considers paint to be lead-containing if the concentration of lead exceeds 90 ppm (0.009% by weight). In 1978, the CPSC banned the sale of lead-based paint to consumers, and banned its application in areas where consumers have direct access to painted surfaces. Both the CPSC and HUD definitions of lead-containing paint are aimed at protecting the general population from exposure to lead in the residential setting.

In contrast, the mission of the Occupational Safety and Health Administration (OSHA) with respect to lead-containing paint is to protect workers during construction activities that may generate elevated airborne lead concentrations. OSHA states that construction work (including renovation, maintenance, and demolition) carried-out on structures coated with paint having lead concentrations lower than the HUD or CPSC can still result in airborne lead concentrations in excess of regulatory limits. For this reason, OSHA has not defined lead-containing paint, but states that paint having any measurable level of lead may pose a substantial exposure hazard during construction work, depending upon the work performed. Therefore, in these situations, OSHA regulations, guidelines, and safety procedures should be followed.

Additionally, the South Carolina Department of Health and Environmental Control (SCDHEC) requires the use of specialized waste disposal sites if materials contain lead waste having concentrations at or exceeding 0.7 mg/cm<sup>2</sup> as determined by testing with an XRF analyzer, or >0.06% (>600ppm) as determined by lab testing for total lead. It is imperative that these regulations are considered as the renovation activities will impact LBP-containing building materials.

## III. INTRODUCTION

As requested, F&ME Consultants has completed a Lead-Based Paint (LBP) investigation of the William-Brice Stadium custodial supply area located at 1125 George Rogers Blvd. in Columbia, South Carolina. This investigation was performed on July 27, 2014.

It is our understanding that the objective of this investigation was to identify and assess the suspect LBP painted and/or coated building components that may be impacted by the planned renovations to the former visiting team locker room and shower area of the subject structure. These areas are currently being utilized by the custodial and concessions staff to store supplies and equipment.

The results, conclusions and recommendations from this investigation are representative of the conditions observed at the site on the dates of the field inspection. F&ME does not assume responsibility for any changes in conditions or circumstances that occur after the inspection. Use of this document for bidding purposes is not recommended without prior consultation with F&ME. No other environmental issues are addressed in this report.

## IV. INVESTIGATION RESULTS

The area included in the investigation is a portion of the original stadium and is currently used as a custodial and concessions supply area. The stadium was originally built in 1934, and it is our understanding that this portion of the subject structure was originally used as the visiting team's locker room and showers. The space is found in the lower level of the stadium, beneath the seating of the east stands. The wall systems associated with this area of the stadium are constructed of a combination of concrete, masonry brick and block walls.



*Photo 1. Exterior of the subject structure includes concrete, masonry block and brick walls.*

Interior finishes within this space include drywall wall and ceilings, masonry block and brick walls, plaster ceilings, spray-applied ceiling texture, a suspended ceiling, concrete floors, vinyl baseboard and carpeting. No discernible roof system was noted. When accessing the areas above the proposed renovation area, only the ceiling joist framing and the upper surfaces of the ceiling system were observed. See the General Building Plan (Figure 2) in Appendix A for the building's layout.

The LBP sampling protocol for this investigation consisted of randomly selecting building components associated with the interior and exterior of the subject building structure and scanning them with our Thermo Scientific Niton X-Ray Fluorescence (XRF) Portable Analyzer (Model XLp300A, Serial #18185, Isotope 1: Cd109, 40mCi, source date 11/15/2011). The limit of detection (LOD) for the XRF is 0.01 mg/cm<sup>2</sup>. The components that were tested with the XRF include the following: walls; doors and components; tiles; ceilings; floors; sink and toilets; columns; beams; etc.

The components that were found to have a lead concentration  $\geq 0.7$  mg/cm<sup>2</sup> included the following:

- Maroon-painted lower half of south exterior cinder block wall, columns, and column pedestals
- Original wooden tongue-n-groove ceiling above existing textured drywall ceiling in supply area #5
- White-painted structural steel column and angle-iron bracing
- Yellow ceramic wall tile in bathroom by urinal
- White-painted structural beam in shower
- Grey-painted wooden wall/gable and joist on top of existing structure from previous structure

Other components were also found to contain lead in concentrations between 0.01 to <0.7 mg/cm<sup>2</sup>. The XRF test results from all dates are organized in Table I, which includes the location, description and type of building material from which the readings were. The General

Building Plan (Figure 2) includes the structure's layout, as well as the "side" designations as listed in Table I.

## V. RECOMMENDATIONS

As reported herein, lead-based paint was identified in concentrations above both the SCDHEC and OSHA limits on the interior and exterior of the subject structure. Based on a general understanding of the scope of the planned renovation activities, these materials will need to be handled according to the regulations of SCDHEC and OSHA. Also, the requirements listed in the University of South Carolina Facility Services Lead Management Plan should also be followed.

The health risk associated with lead comes from the inhaling, ingesting or drinking lead contaminated items. In some cases if the lead has not been aerosolized, and is not chipping or flaking, there may be minimal risk to people. It is when lead containing items are disturbed or begin to decay that they typically pose the greatest risk to a person's health and become more of an environmental hazard.

Special care and procedures are to be used when handling any of the items that tested positive for lead. Using proper Personnel Protection Equipment (PPE) and proper hygiene when working with items that contain lead are a must. The type of procedures and handling depend on whether the item and/or items are going to be removed or renovated. As stated before, OSHA states that paint having **any** measurable level of lead may pose a substantial exposure hazard during construction work, depending upon the work performed. Therefore, in these situations, OSHA guidelines and safety procedures should be followed. By OSHA standards and regulations, the employer shall ensure that no employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air ( $50\mu\text{g}/\text{m}^3$ ) averaged over an 8-hour period.

Additionally, renovation activities associated with LBP-painted surfaces that will disturb the coating (i.e. scraping, sanding, or cutting) must be performed in accordance with all applicable federal, state and local regulations and guidelines requiring lead-safe work practices to prevent the creation of lead dust. Lead-based painted/coated materials must be removed without creating appreciable amounts of dust and disposed of in an SCDHEC-approved landfill. This special care is intended to prevent exposure of the workers to lead via inhalation of lead-contaminated dust. All removal should be performed by certified personnel experienced in removing, handling and properly disposing of LBP. OSHA and EPA regulations list the proper means and methods to be used when handling items containing lead-based paint.

As previously mentioned the SCDHEC is primarily concerned with the proper disposal of LBP and associated debris. Metal components painted with lead based paint may be recycled if they are taken to a recycling facility that accepts lead-based painted materials. The following is a synopsis of the concerns associated with the disposal of materials painted or coated with lead-based paint:

The SCDHEC defines two types of lead-based paint debris. The first is lead-based paint *waste*, which is defined as material such as wood, brick and metal that is painted with lead-based paint. The other is lead-based paint *residue* which is defined as residue that is generated from the removal (e.g., scraped, chipped, sandblasted or chemical) of lead-based paint from a structure. Lead-based paint *waste* that comes from a commercial or



residential facility may be disposed of in either a class 2 or 3 landfill, while lead-based paint *residue* from a commercial facility must have a toxicity characteristic leaching procedure (TCLP) analysis to determine the lead content.

TCLP analysis is used to determine whether or not a waste is a characteristic hazardous waste due to leachability and is expressed in mg/l;  $\geq 5.0$  mg/l is considered hazardous waste under the SC Hazardous Waste Management Regulation. Lead-based paint *residue* from a commercial facility with a TCLP analysis result less than 5 mg/l lead must be disposed of in a class 3 landfill. Lead-based paint *residue* with a TCLP analysis result greater than or equal to 5 mg/l lead must be disposed of in a Subtitle C landfill (Hazardous Waste).

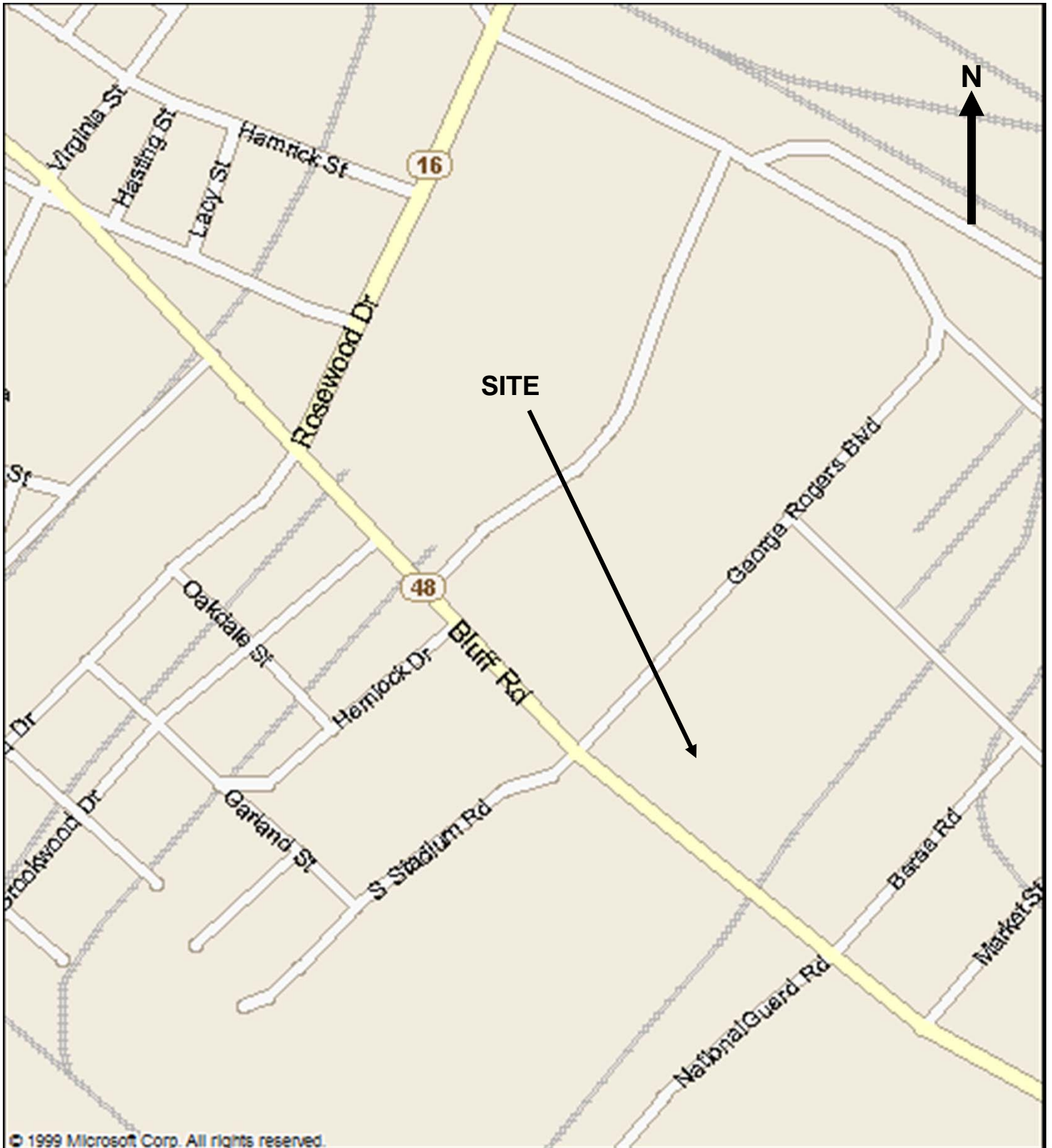
As previously stated, this LBP investigation included the analysis of randomly-selected painted or coated building components associated with the specified areas of the subject structure. **Due to this random selection method, there may be items with lead-based paint or coating(s) that were not tested.** For the purposes of this investigation, untested components that are similar to tested components in material, age, color, and use will be assumed positive or negative based upon the XRF results and should be handled in accordance with OSHA, EPA and SCDHEC guidelines. Therefore, the items that tested positive for lead should be handled as lead-based paint containing materials to ensure compliance with regulatory requirements. However, in the event that untested building components and/or equipment are to be directly affected by renovation activities, direct testing must be performed to determine definitively whether or not LBP is present.

This report has been prepared exclusively for the University of South Carolina and shall not be disseminated in whole or part to other parties without prior consent from the University of South Carolina, or F&ME Consultants, Inc. Use of this document for bidding purposes is not recommended without prior consultation with F&ME.

## **APPENDIX A**

Site Vicinity Map (Figure 1)  
General Building Plan (Figure 2)  
XRF Data (Table I)  
Photographs of Positive Lead-Based Paint Items





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**F&ME**  
CONSULTANTS

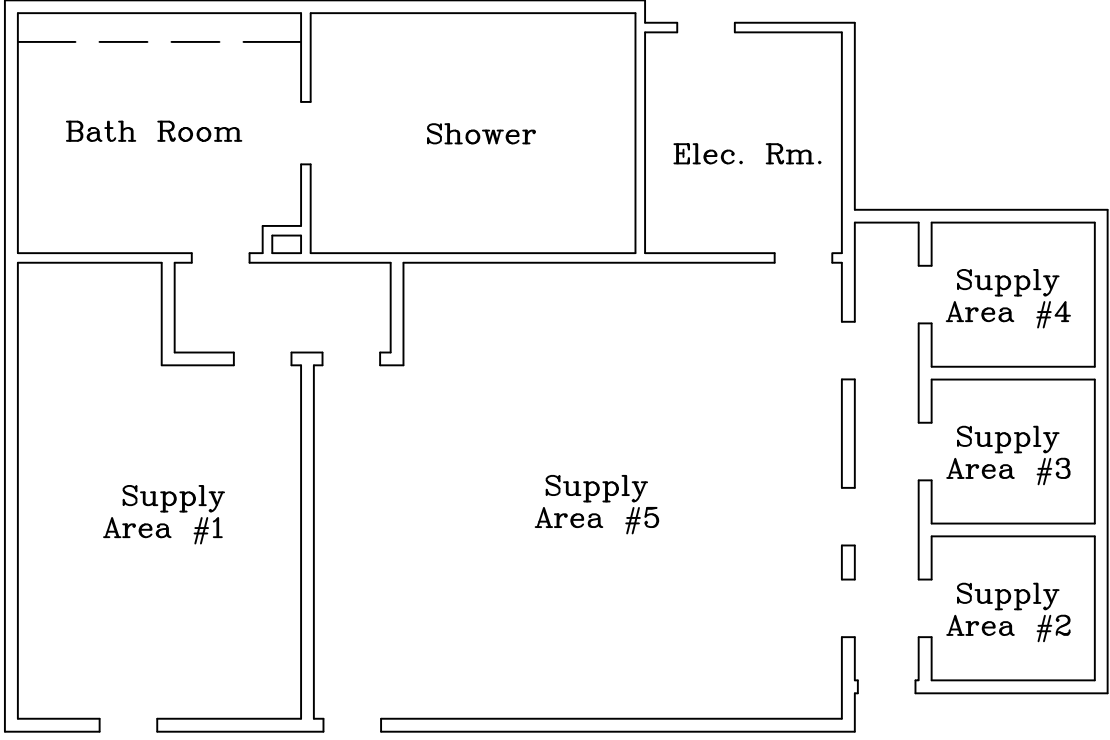
**SITE VICINITY MAP**  
Williams-Brice Stadium Custodial Supply Area  
Columbia, South Carolina

UNIVERSITY OF SOUTH CAROLINA

Prepared By:	MSM	Scale:	N.T.S.
Checked By:	JLS	Project:	E5300.26
Approved By:	GME	Figure:	1



D



C

A

B

**F&ME**  
CONSULTANTS

GENERAL BUILDING PLAN  
WILLIAMS-BRICE STADIUM CUSTODIAL SUPPLY AREA  
COLUMBIA, SOUTH CAROLINA

UNIVERSITY OF SOUTH CAROLINA

DRAWN BY: MSM  
CHECKED BY: JLS  
APPROVED BY: GME

SCALE: 1"=10'  
PROJECT: E5300.26  
FIGURE: 2

**Table I. XRF Data**  
**Lead-Based Paint Investigation**  
**USC Williams-Brice Stadium**  
**Custodial Supply Area**  
**Date Analyzed: 07/23/2014**  
**F&ME Project # E5300.26**

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	ROOM	PbC (mg/cm <sup>2</sup> )
1			Shutter Calibrate				NA
2			Calibrate				0.8
3			Calibrate				1
4			Calibrate				0.4
5			Calibrate				0.7
6			Calibrate				1.1
7	Wall	Cinder Block	B	INTACT	Grey	Exterior	0.17
8	Wall	Cinder Block	B	INTACT	Maroon	Exterior	< LOD
9	Column	Concrete	B	INTACT	Maroon	Exterior	< LOD
10	Column	Concrete	B	INTACT	Grey	Exterior	< LOD
11	Floor	Concrete	B	INTACT	Grey	Exterior	< LOD
12	Floor	Concrete	B	INTACT	Maroon	Exterior	< LOD
13	Column	Metal	B	INTACT	Maroon	Exterior	< LOD
14	Column	Metal	B	INTACT	Grey	Exterior	< LOD
15	Wall	Brick	A	INTACT	Grey	Exterior	< LOD
16	Wall	Brick	A	INTACT	Maroon	Exterior	< LOD
17	X-brace	Metal	B	INTACT	Grey	Exterior	< LOD
18	Wall	Cinder Block	C	INTACT	Grey	Exterior	< LOD
19	Wall	Cinder Block	C	INTACT	Maroon	Exterior	0.5
20	Column	Metal	C	INTACT	Maroon	Exterior	< LOD
21	Column	Metal	C	INTACT	Grey	Exterior	< LOD
22	Column pedestal	Concrete	B	INTACT	Grey	Exterior	< LOD
23	Column pedestal	Concrete	C	INTACT	Maroon	Exterior	5.9
24	Column pedestal	Concrete	C	INTACT	Maroon	Exterior	3.2
25	Column	Concrete	C	INTACT	Maroon	Exterior	< LOD
26	Column	Concrete	C	INTACT	Maroon	Exterior	5.7
27	Wall	Cinder Block	C	INTACT	Maroon	Exterior	< LOD
28	Wall	Cinder Block	C	INTACT	Grey	Exterior	< LOD

Side A = North, then go clockwise

LOD (Limit of Detection) = 0.01mg/cm<sup>2</sup>

Red (> or = 0.7 mg/cm<sup>2</sup>)  
Blue (0.01 to < 0.7 mg/cm<sup>2</sup>)

**Table I. XRF Data**  
**Lead-Based Paint Investigation**  
**USC Williams-Brice Stadium**  
**Custodial Supply Area**  
**Date Analyzed: 07/23/2014**  
**F&ME Project # E5300.26**

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	ROOM	PbC (mg/cm <sup>2</sup> )
29	Wall	Cinder Block	C	INTACT	Grey	Exterior	< LOD
30	Wall	Cinder Block	C	INTACT	Maroon	Exterior	0.8
31	Wall	Wood	C	INTACT	Beige	1	< LOD
32	Wall	Brick	D	INTACT	Beige	1	< LOD
33	Wall	Cinder Block	A	INTACT	Beige	1	< LOD
34	Ceiling	Drywall	A	INTACT	Beige	1	< LOD
35	Door	Wood	B	INTACT	Grey	1	0.3
36	Door Jamb	Wood	B	INTACT	Grey	1	< LOD
37	Door Casing	Wood	B	INTACT	Black	1	0.15
38	Door	Wood	B	INTACT	Black	1	0.16
39	Floor	Concrete	B	PEELING	Grey	5	0.05
40	Old tongue -n-groove ceiling	Wood	B	INTACT	White	5	1.6
41	Old tongue -n-groove ceiling	Wood	B	INTACT	White	5	0.7
42	Ceiling	Drywall	B	INTACT	White	5	< LOD
43	Wall	Drywall	B	INTACT	Grey	5	< LOD
44	Wall	Paneling	B	INTACT	Grey	5	< LOD
45	Wall	Cinder Block	A	INTACT	Grey	5	< LOD
46	Door	Wood	A	INTACT	Grey	5	< LOD
47	Door Casing	Metal	A	INTACT	Grey	5	< LOD
48	Wall	Brick	D	INTACT	Grey	5	< LOD
49	Column	Metal	Center	PEELING	White	5	5.4
50	Column	Metal	Center	PEELING	White	5	3.3
51	Column	Metal	A	PEELING	White	5	2.6
52	Angle iron bracing	Metal	Center	INTACT	White	5	< LOD
53	Angle iron bracing	Metal	Center	INTACT	White	5	< LOD
54	Angle iron bracing	Metal	Center	INTACT	White	5	4

Side A = North, then go clockwise

LOD (Limit of Detection) = 0.01mg/cm<sup>2</sup>

Red (> or = 0.7 mg/cm<sup>2</sup>)  
Blue (0.01 to < 0.7 mg/cm<sup>2</sup>)

**Table I. XRF Data**  
**Lead-Based Paint Investigation**  
**USC Williams-Brice Stadium**  
**Custodial Supply Area**  
**Date Analyzed: 07/23/2014**  
**F&ME Project # E5300.26**

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	ROOM	PbC (mg/cm <sup>2</sup> )
55	Door	Wood	D	INTACT	Black	5	< LOD
56	Door Casing	Metal	D	INTACT	Black	5	< LOD
57	Door Casing	Wood	A	INTACT	Black	Bathroom	< LOD
58	Door	Wood	B	PEELING	Black	Bathroom	0.28
59	Door	Wood	B	PEELING	Grey	Bathroom	< LOD
60	Floor	Concrete	B	PEELING	Grey	Bathroom	< LOD
61	Ceiling	Plaster	B	PEELING	White	Bathroom	< LOD
62	Sink	Porcelain	B	INTACT	White	Bathroom	< LOD
63	Sink	Porcelain	B	INTACT	White	Bathroom	< LOD
64	Toilet	Porcelain	B	INTACT	White	Bathroom	< LOD
65	bathroom stall	Metal	B	INTACT	Maroon	Bathroom	< LOD
66	Wall	Brick	A	PEELING	White	Bathroom	< LOD
67	Urinal Wall	Tile	D	INTACT	Yellow	Bathroom	1
68	Floor	Tile	D	INTACT	Beige	Bathroom	< LOD
69	Floor	Tile	D	INTACT	Red	Bathroom	< LOD
70	Wall	Cinder Block	C	PEELING	White	Bathroom	< LOD
71	Wall	Cinder Block	C	PEELING	White	Bathroom	< LOD
72	Wall	Cinder Block	C	PEELING	White	Bathroom	< LOD
73	Crown Molding	Wood	C	INTACT	White	Bathroom	< LOD
74	Wall	Tile	D	INTACT	Lime	Shower	< LOD
75	Ceiling	Plaster	D	PEELING	White	Shower	< LOD
76	Floor	Tile	D	INTACT	Beige	Shower	< LOD
77	Floor	Tile	D	INTACT	Beige	Shower	< LOD
78	Beam	Metal	D	PEELING	White	Shower	3.8
79	Door	Wood	B	INTACT	Green	Electric room	< LOD
80	Door Casing	Wood	B	INTACT	Green	Electric room	< LOD
81	Door Casing	Wood	D	INTACT	Green	Electric room	< LOD
82	Door	Wood	D	INTACT	Green	Electric room	< LOD

Side A = North, then go clockwise

LOD (Limit of Detection) = 0.01mg/cm<sup>2</sup>

Red (> or = 0.7 mg/cm<sup>2</sup>)  
Blue (0.01 to < 0.7 mg/cm<sup>2</sup>)



**Table I. XRF Data**  
**Lead-Based Paint Investigation**  
**USC Williams-Brice Stadium**  
**Custodial Supply Area**  
**Date Analyzed: 07/23/2014**  
**F&ME Project # E5300.26**

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	ROOM	PbC (mg/cm <sup>2</sup> )
83	Underside of stadium seat	Metal	D	POOR	Grey	Exterior	< LOD
84	Underside of stadium seat	Metal	D	POOR	Grey	Exterior	< LOD
85	Underside of stadium seat	Metal	D	POOR	Grey	Exterior	< LOD
86	Stadium seating X-brace	Metal	D	POOR	Grey	Exterior	< LOD
87	Wall	Cinder Block	B	PEELING	Grey	Exterior	< LOD
88	Wall	Cinder Block	C	INTACT	White	2	< LOD
89	Wall	Brick	D	INTACT	White	2	< LOD
90	Floor	Concrete	D	PEELING	Grey	2	0.03
91	Door	Wood	C	INTACT	Black	2	< LOD
92	Door Casing	Metal	C	INTACT	Black	2	< LOD
93	Door Casing	Metal	C	INTACT	Black	2	< LOD
94	Shelf	Wood	D	INTACT	White	3	< LOD
95	Wall	Brick	A	INTACT	White	3	< LOD
96	Floor	Concrete	Center	PEELING	Grey	3	0.04
97	Crown Molding	Wood	B	INTACT	White	4	< LOD
98	Ceiling	Drywall	B	INTACT	White	4	< LOD
99	Wall	Brick	B	INTACT	White	4	< LOD
100	Wall	Cinder Block	D	INTACT	White	4	< LOD
101	Wall	Wood	A	INTACT	Grey	Exterior/Roof	< LOD
102	Wall	Wood	A	INTACT	Grey	Exterior/Roof	< LOD
103	Exhaust fan frame	Wood	Center A	INTACT	Grey	Exterior/Roof	< LOD
104	Column	Metal	Center A	INTACT	Grey	Exterior/Roof	< LOD
105	Beam	Metal	Center A	INTACT	Grey	Exterior/Roof	< LOD
106	Old wall	Wood	Center A	POOR	Grey	Exterior/Roof	2.2
107	Old joist	Wood	Center A	INTACT	Grey	Exterior/Roof	2.1
108			Shutter Calibrate				NA
109			Calibrate				1.1
110			Calibrate				0.8

Side A = North, then go clockwise

LOD (Limit of Detection) = 0.01mg/cm<sup>2</sup>

Red (> or = 0.7 mg/cm<sup>2</sup>)  
Blue (0.01 to < 0.7 mg/cm<sup>2</sup>)

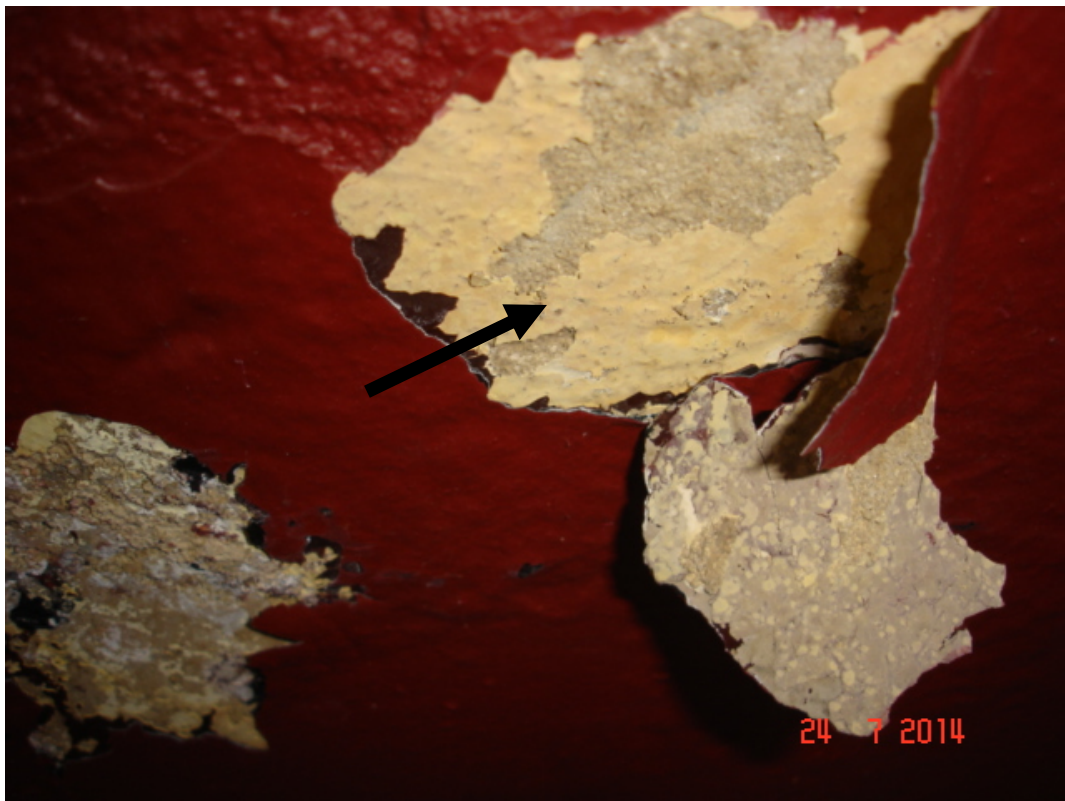
**Table I. XRF Data**  
**Lead-Based Paint Investigation**  
**USC Williams-Brice Stadium**  
**Custodial Supply Area**  
**Date Analyzed: 07/23/2014**  
**F&ME Project # E5300.26**

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	ROOM	PbC (mg/cm <sup>2</sup> )
111			Calibrate				0.5
112			Calibrate				0.3





Lead-based paint on maroon painted wall and columns on south end exterior wall; may be an underlying paint that contains the lead





Lead-based paint on tongue-n-groove ceiling above the textured drywall ceiling in supply area #5





Lead-based paint on structural column and angle-iron bracing in supply area #5





Lead in ceramic yellow tile by urinal in the bathroom



Lead-based paint on structural steel in shower



Lead-based paint on wooden wall from previous structure on top of existing structure







Lead-based paint on wooden joist from previous structure on top of existing structure

## **APPENDIX B**

Personnel Certification



# United States Environmental Protection Agency

This is to certify that

Jeffrey Steve Leary

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as a:

Inspector

In the Jurisdiction of:

South Carolina

This certification is valid from the date of issuance and expires July 29, 2015

SC-I-18721-2

Certification #

JUN - 6 2012

Issued On




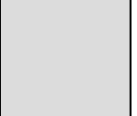


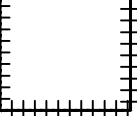

Jeanne M. Gettle, Chief

Pesticides and Toxic Substances Branch

A handwritten signature in blue ink, appearing to read "Jeanne M. Gettle".



**LEGEND**

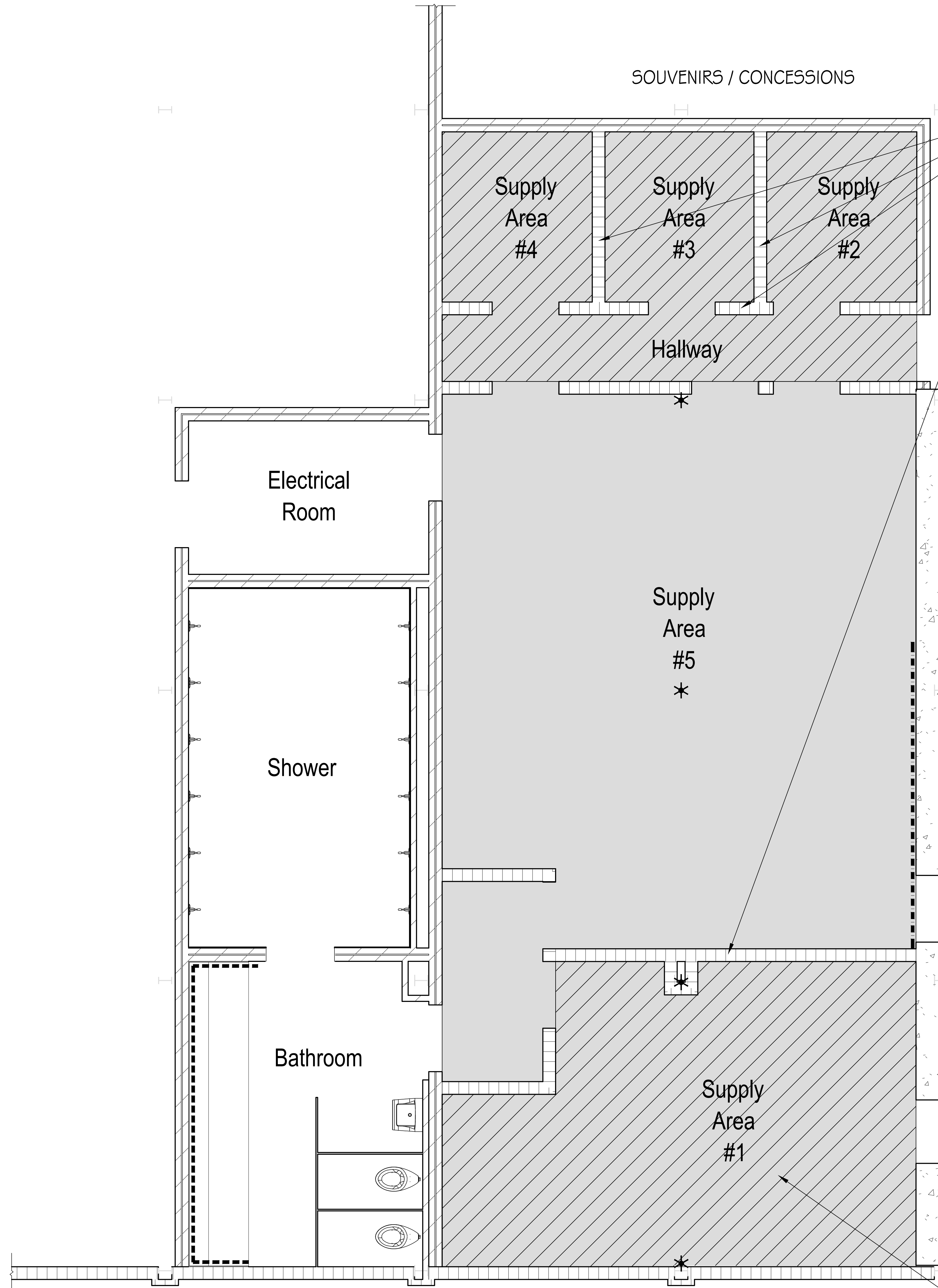
-  ACM Spray-Applied Ceiling Texture and Joint Compound Associated with Drywall to be Removed
-  Original Tongue & Groove Ceiling Coated with Lead-Based Paint to be Removed. Found above Texture Ceilings Where Noted
-  Lead Containing Ceramic Wall Tile to be Removed
-  Drywall and Associated ACM Joint Compound to be Removed
-  ADD ALTERNATE 1 - ACM Wall Surfacing Material to be Removed if Alternate Price is Accepted.
-  Contractor to Remove Lead-Based Paint Down to Bare Steel all Components of the Top Three (3) Feet of Column in These Locations

**GENERAL ABATEMENT NOTES**

1. Contractor shall thoroughly read all specifications and plans and thoroughly review all abatement documents (i.e. ACM and LBP Investigation Reports) prior to commencement of abatement activities.
2. The Contractor shall be responsible for verification of all site conditions and quantities associated with the abatement prior to the bid. Actual quantities shall be documented and confirmed during the abatement operations by the Contractor and Owner's Representative.
3. Contractor shall thoroughly clean areas where abatement is to occur prior to abatement operations.
4. Contractor is to ensure that all governing EPA, the SCDHEC and OSHA regulations are followed during the abatement of the facility.
5. Containment shall be established and in place prior to the start of friable abatement activities.
6. Negative pressure shall be established prior to start of gross removal during friable abatement activities.
7. Existing HVAC supply and return duct systems leading into the abatement work areas shall be cut and capped prior to start of wet removal activities.

**ABATEMENT TASKS**

Contractor shall complete friable abatement of drywall and spray-applied ceiling texture in supply Area #1, #2, #3, #4 and hallway. Contractor is to be aware that drywall and associated ACM joint compound is located on one wall in Supply Area #5. This area will need to be included into the friable abatement work area. Contractor shall clean residual spray applied texture ceiling material over spray throughout these areas. All vertical and horizontal surfaces to included piping, metal ductwork, concrete floors and decking above and masonry walls throughout these areas shall be thoroughly cleaned of residual asbestos contamination, debris, and over spray from the original asbestos-containing spray applied textured ceiling material found throughout the building.



Contractor is to be aware the drywall and spray-applied ceiling texture may be concealed above the existing block walls in these areas. Contractor is to remove these materials, if present, while under containment.

ADD ALTERNATE 1 - As an alternate to the base bid Contractor shall include price for removal of ACM surfacing material from top portion of existing masonry wall, for the length of the wall in this area. Contractor is to remove these materials down to masonry surface while under full containment. After abatement Contractor Shall apply an approved encapsulant to the exposed surface.

ACM spray applied ceiling texture found above non-ACM suspended ceiling system this area. Suspended ceiling system and associated grid shall be removed as an abatement task. All debris generated shall be disposed of as ACM.

SCALE: 3/8" = 1.0'

DRAWING	DATE	DESCRIPTION	DATE	DESCRIPTION
AB-1	February, 2015			

THIS DRAWING AND ASSOCIATED ABATEMENT DESIGN HAS BEEN REVIEWED AND APPROVED BY THE ABATEMENT PROJECT DESIGNER  
 DATE: 02/12/15



1.00 GENERAL

1.01 DESCRIPTION:

A. Related Work Specified Elsewhere:

1. Concrete work: Division 3.
2. Reinforced Unit Masonry: Division 4.
3. Structural steel and metals: Division 5.
4. Rough carpentry: Division 6.

B. Material Installed but Furnished by Others:

1. Bolts.
2. Anchors.
3. Nailing blocks.
4. Inserts.
5. Flashing.
6. Lintels.
7. Doors.
8. Window frames.
9. Vents.
10. Conduits.
11. Expansion joints.

1.02 QUALITY ASSURANCE:

- A. Brick Tests: Test in accordance with ASTM C 67. See Section 1.03 for additional information. Cost of tests of units after delivery shall be borne by the purchaser, unless tests indicate that units do not conform to the requirements of the specifications, in which case cost shall be borne by the seller.
- B. Concrete Masonry Tests: Shall be in accordance with ASTM C 90. Also see Section 1.03.
- C. Color Selection Panels:
1. Match existing solid clay masonry units.

1.03 SUBMITTALS:

- A. Samples: Furnish one brick as sample matching existing.
- B. Test Reports:
1. Test reports for each type of building and facing brick are to be submitted to the Architect Engineer for approval.
  2. Testing and reports are to be completed by an independent laboratory. Test data shall not be more than 12 months old at the time of submittal.
  3. Brick test reports shall show:
    - a. Compressive strength.
    - b. 24 - hr. cold water absorption.
    - c. 5 - hr. boil absorption.



- d. Saturation coefficient.
  - e. Initial rate of absorption (suction).
- C. Certificates: Prior to delivery, submit to Architect/Engineer certificates attesting compliance with the applicable specifications for grades, types or classes included in these specifications.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Store brick off ground to prevent contamination by mud, dust or materials likely to cause staining or other defects.
- B. Cover materials when necessary to protect from elements.
- C. Protect reinforcement from elements

1.05 JOB CONDITIONS:

- A. Protection of Work:
  - 1. Wall covering:
    - a. During erection, cover top of wall with strong waterproof membrane at end of each day or shutdown.
    - b. Cover partially completed walls when work is not in progress.
    - c. Extend cover minimum of 24 in. (610 mm) down both sides.
    - d. Hold cover securely in place.
  - 2. Load application:
    - a. Do not apply uniform floor or roof loading for at least 12 hr. after building masonry columns or walls.
    - b. Do not apply concentrated loads for at least 3 days after building masonry columns or walls.
- B. Staining:
  - 1. Prevent grout or mortar from staining the face of masonry to be left exposed or painted:
    - a. Remove immediately grout or mortar in contact with face of such masonry.
    - b. Protect all sills, ledges and projections from droppings of mortar, protect door jambs and corners from damage during construction.
- C. Cold Weather Protection:
  - 1. Preparation:
    - a. If ice or snow has formed on masonry bed, remove by carefully applying heat until top surface is dry to the touch.
    - b. Remove all masonry deemed frozen or damaged.

2. Products:
  - a. When brick suction exceeds recommendations of Section 1.03.B.3, sprinkle with heated water: When units are above 32 degrees F heat water above 70 degrees (21 degrees C.).
  - b. Use dry masonry units.
  - c. Do not use saturated or frozen units.
3. Construction requirements while work is progressing:
  - a. Air temperature 40 degrees F and above.
    - 1) Heat sand or mixing water to produce mortar temperatures between 40 degrees F. (4 degrees C.) and 120 degrees F. (49 degrees C.).
  - b. Work shall stop when temperature is 40 degrees and falling.
4. Protection requirements for completed masonry and masonry not being worked on:
  - a. Mean daily air temperature 40 degrees F. (4 degrees C.) and falling.
    - 1) Protect masonry from rain or snow for 24 hr. by covering with weather-resistive membrane.

## 2.00 PRODUCTS

### 2.01 BRICK:

- A. Facing Brick:
  1. ASTM C 216-99, Grade SW, Type FBS.
  2. Brick Sizes:
    - a. Match Existing size and texture.
  3. Minimum compressive strength: 8000 PSI.
- B. Facing Brick: shall have the full range of brick colors mixed throughout in a uniform percentage of colors. All brick delivered to the site shall match throughout the project. Provide solid units, corner units and special shapes as required for the work. See drawings for special shapes required in the work.
- C. Brick shall be selected from one of the following brick manufacturers:
  1. Carolina Ceramics
  2. The Exum Company, Inc
  3. Hanson Brick
  4. Boral Bricks, Inc.
  5. Palmetto Brick Company

2.02 REINFORCEMENT:

- A. Cold-drawn steel wire: ASTM A 82-72.
- B. Welded steel wire fabric: ASTM A 185-73.
- C. Billet steel deformed bars: ASTM A 615-72, Grade 60.
- D. Rail steel deformed bars: ASTM A 616-72, Grade 60.
- E. Axle steel deformed bars: ASTM A 617-72, Grade 60.

2.03 ANCHORS AND TIES: All anchors and ties shall meet the 2006 IBC Code for seismic and wind design with the latest revisions.

- A. Coated or corrosion-resistant metal meeting or exceeding applicable standard:
  - 1. Zinc-coating of wire, ASTM A 116-73, Class 3.
  - 2. Copper-coated wire: ASTM B 227-70, Grade 30HS.
- B. Types:
  - 1. Wire mesh:
    - a. Minimum gage: 20.
    - b. Mesh: 1/2 in. (12.7 mm).
    - c. Galvanized wire.
    - d. Width: 1 in. (25 mm) less than width of masonry.
  - 2. Ties: Products listed are by Wire Bond. Equal products by Dur-O-Wall, Heckmann or approved equal.
    - a. Masonry Single Wythe (Space 16" o.c.)
      - 1) Series 200 - 2 wire ladder system
    - b. Masonry Multiple Wythes (Space 16" o.c. with tables at 16" o.c.)
      - 1) Series 800 - Cavity hook and eye tabbed at 16" o.c. with seismic wire bond clip welded to a double hook and eye system with a continuous 9 ga. wire Wires may be butt spliced between ties. Stagger splices 4' minimum from reinforcing to reinforcing.
    - c. Masonry to Metal Studs: (Space veneer anchors at 16" o.c. each way)
      - 1) Through insulation or wallboard use HCL-711 with prongs to pierce wallboard. This system shall be used with the seismic wire bond clip.
      - 2) At areas where there is no insulation or plywood backerboard use the RJ-711 series with the seismic wire bond clip.
    - d. Masonry to Steel Columns: (Space anchors at 16" o.c. each way)

1) Use 12 ga. Type III anchors with seismic wire bond clip. Anchors shall be fastened to steel with power activated fasteners or screwed where allowed by the structural engineer.

e. Masonry to Concrete:

- 1) Provide 22 ga. mill galvanized slots at 16" o.c.
- 2) Provide dovetail anchors at 16" o.c. each way with triangular ties and seismic wire bond clips.

Ties for brick shall be 3/16" round steel wire coated with copper or zinc in accordance with ASTM Spec. A116-73, Class 3, for zinc or B227-70, Grade 30HS for copper. Spacing of ties shall not exceed 16 inches horizontally and 16 inches vertically, staggered, with ties spaced not greater than 8 inches vertically within 12 inches of openings.

3. Rigid anchors for intersecting bearing walls:

- a. Dimensions: 1 1/2 in. (38 mm) wide by 1/4 in. (6.4 mm) thick by minimum 24 in. (610 mm) long.
- b. Fabrication: Turn up ends minimum 2 in. (51 mm) or provide cross pins.

4. Galvanizing: For use in interior partition walls fabricate from mill galvanized wire. For use in exterior walls, hot-dip galvanized after fabrication with 1.5 ounce zinc coating complying with ASTM A153-73, Class B2.

5. Reinforcing Bars: ASTM A615-72, Grade 60 or sizes shown.

6. Anchoring Devices: Provide straps, bars, bolts and rods of the type and size shown, but fabricated from not less than 16 gauge sheet metal or 3/8" diameter rod stock, unless otherwise noted.

7. Concrete Inserts for Masonry:

Unit Type: Furnish cast iron or malleable iron inserts of the type and size shown or fabricated from not less than 12 gauge steel, hot-dip galvanized after fabrication with 1.5 oz. zinc coating complying with ASTM A153, Class B2.

8. Galvanized steel centering clips for vertical reinforcement placement.

9. Other ties shall be as noted on architectural or structural drawings.

#### 2.04 CLEANING AGENTS:

- A. Do not use cleaning agent other than water on brick, except with concurrence of Architect/Engineer.
- B. Acceptable cleaner for dark brick: shall be per manufacturer's recommendations.
- C. Acceptable cleaner for light colored brick: shall be per manufacturer's recommendations.

2.05 MORTAR:

A. Mortars: Conform to requirements of ASTM 270, Type S for all weather exposed, load bearing and below ground masonry. Type S or N for all other masonry. Mortar color as follows: Submit samples to architect for approval.

1. Brick #1 Mortar Color: Match existing.

Mortar shall be selected from the following mortar manufacturers:

1. Holcim (US) Inc.
2. Lafarge North America Inc.

Modules of rupture of exterior and load bearing brick masonry shall not be less than 100 psi. Modules of rupture of brick masonry with Type S mortar of Portland Cement, Hydrated Lime and sand has been established by previous tests as succeeding 100 psi; exterior and load-bearing brick masonry with other mortars shall provide a modules of rupture of not less than 100 psi, as established by ASTM Method E72-74 Transverse Load-Specimen Vertical; submit three copies of such test and secure approval prior to commencement of masonry work. Volumetric mortar proportions subject to above limitation are:

MORTAR TYPE	PORTLAND CEMENT	MASONRY CEMENT	HYDRATED LIME	AGGREGATE (DAMP & LOOSE)
N	1	-	1	6
N	-	1	-	3
S	1	-	1/2	4-1/2
S	1/2	1	-	4-1/2

B. **Mortar shall not be used to fill reinforced masonry cells or bond beams.** Grout for use in reinforced masonry shall be provided by the project ready-mix producer. Mortar may be used to fill hollow metal door frames as the wall is being laid. See Section 03310 for submittal requirements. See Section 04230 for grout requirements.

C. Materials

Portland Cement: Conform to ASTM Spec. C150-74, Type 1, 11 or 111.

Masonry Cement: Conform to ASTM Spec. C91.

Hydrated Lime: Conform to ASTM Spec. C207-74, Type S

Aggregate: Conform to ASTM Spec. C144-70 for mortar and C404-70 for grout.

2.06 LIGHTWEIGHT CONCRETE MASONRY UNITS (CMU)

A. ASTM C90, for hollow load bearing concrete masonry units.

1. Concrete masonry units shall be of modular dimensions and units shall be of the same appearance and shall be cured by the same process delivered to the project site in an air-dry condition. Units shall be made with the lightweight aggregate conforming to ASTM C 331.
2. Standard Concrete Block: Comply with referenced standards as follows:

- a. Size: Standard units with nominal face dimensions of 16 x 8 inches and nominal depths as indicated on drawings for specific locations.
  - b. **Special Shapes: Provide special shapes where shown and where required for lintels, corners, 45° turns, solid row locks, jambs, headers, bonding, and other special conditions. See plans for details.**
  - c. Load-Bearing Units: ASTM C 90 lightweight.
3. Lightweight Concrete Masonry Units:
- a. Lightweight concrete masonry units shall conform to the requirements of ASTM C 90 – latest addition, for load bearing masonry units. **All units shall be free of organic impurities that will cause rusting, staining or pop outs, and shall contain no combustible matter. The use of coal, coke or cinder/bottom ash aggregates, will not be allowed.**
  - b. All lightweight aggregate used in the concrete units shall be expanded shale, clay, slate or slag. Normal weight aggregate may be used.
  - c. The producer of the lightweight concrete masonry units will furnish a letter of clarification stating that all lightweight aggregate used in the manufacture of the units was expanded shale, clay, slate or slag and that no coal, coke, cinder/bottom ash or similar type aggregates were used.
  - d. A random sample of the concrete masonry units may be taken and tested by an independent testing lab to assure that the concrete units conform to all specifications.
4. Concrete Brick: ASTM C 55, Grade N, normal weight, size as indicated on drawings.
5. References:
- ACI 216.1/TMS 0216.1 – *Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies.*
- ACI 530/ASCE 5/TMS 402 – *Building Code Requirements for Masonry Structures.*
- ACI 530.1/ASCE6/TMS 602 – *Specification for Masonry Structures*
- ASTM C 55 – *Standard Specification for Concrete Brick*
- ASTM C 90 – *Standard Specifications for Loadbearing Concrete Masonry Units*
- ASTM C 140 – *Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units.*
- ASTM C331 - *Lightweight Aggregates for Concrete Masonry Units*
- D. All exposed outside corners shall have bullnose edges unless noted otherwise in plans and details.
- E. Fire Rating Requirements: Provide units meeting the fire rating requirements of walls as shown. The contractor shall provide certification in writing from the manufacturer that the concrete masonry units supplied meet or exceed the minimum rating requirements for fire rated walls shown on the drawings.
- 2.08 Metal Flashing at high roof to low roofs or elsewhere as detailed shall be as specified in Section 07 60 00 - Flashing and Sheet Metal.

3.00 EXECUTION

3.01 PREPARATION:

A. Wetting Brick:

1. Wet brick with absorption rates in excess of 30 g./30 sq. in./min. (30 g./194 cm<sup>2</sup>/min.) determined by ASTM C 67, so that rate of absorption when laid does not exceed this amount.
2. Recommended procedure to insure that brick are nearly saturated, surface dry when laid is to place a hose on the pile of brick until the water runs from the pile. This should be done one day before brick are to be used. In extremely warm weather, place hose on pile several hours before brick are to be used.
3. Do not wet CMU units before installation.

B. Cleaning Reinforcement: Before being placed, remove loose rust, ice and other coatings from reinforcement.

3.02 GENERAL ERECTION REQUIREMENTS:

A. Pattern Bond:

1. Lay exposed masonry in running bond to match existing unless noted otherwise.
2. Bond unexposed masonry units in a wythe by lapping at least 2 in. ( 51 mm).

B. Joining of Work:

1. Where fresh masonry joins partially set masonry:
  - a. Remove loose brick and mortar.
  - b. Clean and lightly wet exposed surface of set masonry.
2. Stop off horizontal run of masonry by racking back 1/2 length of unit in each course.

C. Tooling:

1. Tooling:
  - a. Tool exposed joints when "thumbprint" hard with a round jointer, slightly larger than width of joint.
  - b. Trowel-point or concave-tool exterior joints below grade.
  - c. Flush cut all joints not tooled.
  - d. Brush brick daily to remove loose mortar.

D. Flashing:

1. Clean surface of masonry smooth and free from projections which might puncture flashing material.
  - a. Place through-wall flashing on bed of mortar.
  - b. Cover flashing with mortar.

F. Sealant Recesses:

1. Leave joints around outside perimeters of exterior doors, window frames and other wall openings:

- a. Depth: uniform 3/4 in. (19 mm).
  - b. Width: 1/4 in. (6.4 mm) to 3/8 in. (9.5 mm).
- H. Cutting Brick:
- 1. Cut exposed brick with motor-driven saw. Provide cuts that are straight and true.
- I. Mortar Joint Thickness:
- 1. Lay all brick with 3/8" joint to match existing adjacent work.
- J. Tolerances: Erect masonry within tolerances of the more stringent of the following : As noted in Section 2.3.3.2 of ACI 530.1, or as specified herein, or per the approved masonry panel.

3.03 LINTELS AND BEARING PLATES: Install loose lintels of steel and other materials where shown. Steel lintels and plates shall not protrude past the plane of masonry.

- A. Provide masonry lintels where shown and wherever openings of more than 1'-0" are shown without structural steel or other supporting lintels. Provide precast or formed-in-place masonry lintels. Thoroughly cure precast lintels before handling and installation. Temporarily support formed-in-place masonry lintels. Unless otherwise shown, provide one reinforcing bar for each 4" of wall thickness and of a size number not less than the number of feet of opening width. For hollow masonry units walls, use specially formed "U" shaped lintel units with reinforcing bars placed as shown and filled with concrete or grout. Mortar shall not be used for masonry lintels.
- B. Provide Minimum Bearing at each jamb, of 8" for openings less than 6'-0" wide, and 12" for wider openings.

3.05 CLEANING:

- A. Cut out any defective joints and holes in exposed masonry and repoint with mortar.
- B. Clean all exposed unglazed masonry:
  - 1. Clean initially with stiff brushes and water.
  - 2. When cleaning agent is required, use Sur-Clean where approved by the brick manufacturer.
    - a. Follow brick manufacturer's recommendations.
    - b. Thoroughly wet surface of masonry on which no green efflorescence appears.
    - c. Scrub with acceptable cleaning agent.
    - d. Immediately rinse with clear water.
    - e. Do small sections at a time.
    - f. Work from top to bottom.

END OF SECTION 04 20 00





1.0 GENERAL:

1.1 RELATED DOCUMENTS: Drawings and general provisions of Contract, including general and supplementary conditions and Division 1 specification sections, apply to work of this section.

ACI 530.1, Specifications for Masonry Structures

1.2 DESCRIPTION OF WORK: Extent of each type of reinforced unit masonry work is indicated on drawings and in schedules.

1.3 SUBMITTALS:

- A. General: Submit the following in accordance with conditions of the Contract and Division 1 Specification Sections.
- B. Product Data: For each type of manufactured material and product, including concrete block, reinforcement, reinforcement accessories, joint systems, and others if requested.
- C. Shop drawings: Submit 4 copies of shop drawings for fabrication, bending and placement of reinforcement bars. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures". Show bar schedules, diagrams of bent bars, stirrup spacing, lateral ties and other arrangements and assemblies as required for fabrication and placement of reinforcement for unit masonry work.
- D. Steel Reinforcement: Provide Mill certificates for all steel reinforcement.
- E. Fire Resistance Rating Certification: Provide written certification that the concrete block provided for this project meets the requirements of the International Building Code, latest edition, for the fire resistance rated block required for the fire resistance rated assemblies for this project.

2.0 PRODUCTS:

2.1 MATERIALS:

- A. General: Refer to Section "Unit Masonry" for masonry materials and accessories not included in this section.
- B. Reinforcement Bars: Provide deformed bars of following grades complying with ASTM A615, except as otherwise indicated.
  - 1. Provide Grade 60 for all reinforcing bars.
  - 2. Shop-fabricate reinforcement bars which are shown to be bent or hooked.
- C. All CMU used for fire rated walls must meet the 2012 IBC requirements for rating of the block per table 721.3.2 or be UL listed and approved for the required hourly rating of the wall as indicating on the plans.

3.0 EXECUTION:

3.1 PLACING REINFORCEMENT:

- A. General: Clean reinforcement of loose rust, mill scale, earth, ice or other materials which will reduce bond to mortar or grout. Do not use reinforcement bars with kinks or bends not shown on drawings or final shop drawings, or bars with reduced cross-section due to excessive rusting or other causes.
- B. Position reinforcement accurately at the spacing indicated. Support and secure vertical bars against displacement. Horizontal reinforcement may be placed as the masonry work progresses. Where vertical bars are shown in close proximity, provide a clear distance between bars of not less than the nominal bar diameter or 1" (whichever is greater).
- C. Splice reinforcement bars where shown; do not splice at other points unless acceptable to the Architect. Provide lapped splices, unless otherwise indicated. In splicing vertical bars or attaching to dowels, lap ends, place in contact and wire tie.
  - 1. Lap all bars as follows:

Bar Size Lap Length

#4 2'-0"

#5 2'-6"

#6 3'-0"

- D. Vertical reinforcement shall be secured against displacement prior to grouting at intervals not exceeding 8 feet.
- E. Anchoring: Anchor reinforced masonry work to supporting structure as indicated.

3.2 INSTALLATION GENERAL:

- A. Refer to Section "Unit Masonry" for general installation requirements of unit masonry.
- B. Refer to masonry notes in structural drawings for additional installation requirements.

3.3 INSTALLATION OF REINFORCED CONCRETE UNIT MASONRY:

- A. General:
  - 1. Do not wet concrete masonry units (CMU).
  - 2. Lay CMU units with full-face shell mortar from face of unit to a distance behind face equal to not less than the thickness of longitudinal face shells. Solidly bed cross-webs of starting courses in mortar. Maintain head and bed joint widths shown, or if not shown, provide 3/8" joints.

Where solid CMU units are shown, lay full mortar bead and bed joints.
- B. Walls:
  - 1. Pattern Bond: Lay CMU wall units in 1/2-running bond with vertical joints in each course centered on units in courses above and below, unless otherwise indicated. Bond and interlock each course at corners and intersections. Use special-

shaped units where shown, and as required for corners, jambs, sash, control joints, lintels, bond beams and other special conditions.

2. Maintain vertical continuity of core or cell cavities, which are to be reinforced and grouted, to provide minimum clear dimension indicated and to provide minimum clearance and grout coverage for vertical reinforcement bars. Keep cavities free mortar. Solidly bed webs in mortar where adjacent to reinforced cores or cells.
3. Where horizontal reinforced beams (bond beams) are shown, use special units or modify regular units to allow for placement of continuous horizontal reinforcement and other reinforcing bars. Place small mesh, expanded metal lath, or wire screening in mortar joints under bond beam courses over cores or cells on non-reinforced vertical cells, or provide units with solid bottoms.

C. Columns, Piers and Pilasters:

1. Use CMU units of the size, shape and number of vertical core spaces shown. If not shown, use units which provide minimum clearances and grout coverage for number and size of vertical reinforcement bars shown.
2. Provide pattern bond shown, or not shown, alternate head joints in vertical alignment.

D. Grouting:

1. Grout shall be provided by the ready-mix concrete producer. See Section 03310 for submittal requirements. Grout shall be course grout, having a design slump of at least 4".
2. Grout shall have a minimum 28-day compressive strength of 2500 psi. Slump shall be 8 to 11 inches. Vibrate grout to assure cells are filled solid.
3. Compressive strength of grout shall be determined by ASTM C 1019-99. One set of 4 compressive strength specimens shall be fabricated and tested for each days placement of grout, or for each 30 cubic yards of grout, whichever is less.

E. Low-Lift Grouting:

1. Provide minimum clear dimension of 2" and clear area of 8 sq. in. in vertical cores to be grouted.
2. Place vertical reinforcement prior to laying of CMU. Extend above elevation of maximum pour height as required for splicing. Support in position at vertical intervals not exceeding 192 bar diameters not 8 ft.
3. Lay CMU to maximum pour height. Do not exceed 6' height, or to include the next bond beam, whichever is less.
4. Pour grout using chute or container with spout. Rod or vibrate grout during placing. Place grout continuously; do not interrupt pouring of grout for more than one hour. Terminate grout pours 1 1/2" below top course of pour.
5. Bond Beams: Stop grout in vertical cells 1 1/2" below bond beam course. Place horizontal reinforcement in bond beams; lap at corners and intersections as shown. **Place grout in bond course before placing CMU.**

- F. Preparation of Grout Spaces: Prior to grouting, inspect and clean grout spaces. Remove dust, dirt, mortar droppings, loose pieces of masonry and other foreign materials from grout spaces. Clean reinforcement and adjust to proper position. Clean top surface of structural members supporting masonry to ensure bond. After final cleaning and inspection, close clean out holes and brace closures to resist grout pressures.

1. Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist displacement of masonry units and breaking of mortar bond. Install shores and bracing, if required, before starting grouting operations.
- G. Place grout by pumping into grout spaces unless alternate methods are acceptable to the Architect.
- H. Limit grout pours to sections which can be completed in one working day with not more than one hour interruption of pouring operation. Place grout in lifts which do not exceed 4'. Allow not less than 30 minutes, or more than one hour between lifts of a given pour. Rod or vibrate each grout lift during pouring operation.
1. Place grout in lintels or beams over openings in one continuous pour.
- I. Where bond beam occurs more than one course below top of pour, fill bond beam course to within 1" of vertically reinforced cavities, during construction of masonry.
- J. When more than one pour is required to complete a given section of masonry, extend reinforcement beyond masonry as required for splicing. Pour grout to within 1 1/2" of top course of first pour. After grouted masonry is cured, lay masonry units and place reinforcement for second pour section before grouting. Repeat sequence if more pours are required.

END OF SECTION 04 23 00

1.00 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 specification sections, apply to work of this section.

1.02 QUALITY ASSURANCE:

- A. Fire-Resistance Standards: Where plaster fireproofing is indicated for a fire-resistance rating, including those required to comply with governing regulations, provide materials and installation identical with assemblies which have been tested and defined in publications by recognized rating authorities. Comply with applicable design numbers of "Fire Resistance Index" by Underwriters Laboratories (UL).
- B. Manufacturer: Provide cementitious fireproofing as defined in the current UL Directory, by Underwriters Laboratories, Inc., by one of the following:
- Isolatec International, Inc.  
Grace Construction Products  
Carbolite, Inc.
- C. Provide products containing no detectable asbestos as determined according to the method specified in 40 CFR 763, Subpart E, Appendix E, Section 1, "Polarized Light Microscopy."

1.03 SUBMITTALS

- A. Product Data: Submit 2 copies of manufacturer's product specifications and installation instructions for each product, including data showing compliance with the requirements. Distribute an additional copy of each installation instruction to the installer.
- B. Shop Drawings: Show extent of sprayed fire-resistive material for each construction and fire-resistance rating, applicable fire-resistive design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction, and minimum thicknesses.
- C. Test Reports: Submit laboratory test report or manufacturer's certification including required test results.

2.00 PRODUCTS

2.01 MATERIALS:

- A. Firesafing Insulation shall be one of the following:
1. Durablanket Ceramic Fiber
  2. Thermafiber Safing Insulation by USG.
  3. Mineral Wool
- B. Structural Steel Protection - Sprayed-On Fireproofing: Comply with ANSI A42.1 and A42.2 (as applicable) for cements, aggregates and other ingredients of plaster (fireproofing mixes, and provide either neat or ready-mixed products). Where more than one choice of materials is indicated, selection is Installer's option provided the indicated fire-resistance requirements are fulfilled. Products shall be as follows:
1. Monokote by W.R. Grace

2. Cafco 300 by Isolatec, International, Inc.
  3. Pyrolite 15 by Carbolite, Inc.
- C. Spray Sealer at Top of Rated Walls and Sound Walls:
1. Fire Dam Spray by 3M installed in accordance with UL System No. HW-D-0031. Apply to one side at sound walls.
  2. CP672 Speed Spray by Hilti installed in accordance with UL System No. HW-D-0181. Apply to one side at sound walls.
- D. Fireproofing shall have been tested by UL in accordance with the procedures of ASTM E-119, with material having been sprayed onto structural members with proper thickness to provide full coverage.
- E. Bonding Materials: Comply with manufacturer's recommendations and fire-resistance rating limitations for the use of adhesive, bond coats and similar materials to ensure bond of fireproofing to substrate with bonding strength of not less than 20 times the weight of fireproofing. Comply with ASTM E-736 and ASTM E-760.

### 3.00 EXECUTION

#### 3.01 PREPARATION

- A. Examination of Substrates: The installer must examine the substrate and the conditions under which the fireproofing work is to be performed, and notify the contractor in writing of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.
- B. Coordination: Proceed with fireproofing only after clips, brackets, hangers, piping penetrations and similar interruptions of the substrates have been installed, and prior to installation of ductwork, major piping, equipment and similar work which is near the substrate and would obstruct the proper installation of the fireproofing.

#### 3.02 APPLICATION

- A. General: Application of sprayed fireproofing shall be in accordance with printed instructions of material manufacturer for the storage, handling, mixing, placement and curing of fireproofing materials.
- B. Thickness of material shall be tested under Owner testing.

#### 3.03 CUTTING AND PATCHING:

- A. Cut, patch, repair and point-up fireproofing as required and as necessary to accommodate other work. Repair cracks and indented surfaces. Point-up surfaces around items which are built into or penetrate surfaces. Repair or replace the work to eliminate blisters, buckles, excessive craze cracking, dry outs, efflorescence, sweat outs and similar imperfections. Repair or replace the work as necessary to comply with specified fire-resistance ratings.

#### 3.04 CLEANING AND PROTECTION:

- A. Remove temporary covering and whatever other provisions were made to minimize spattering of fireproofing on other work. Repair surfaces which have been stained,

marred or otherwise damaged during the work. When fireproofing is completed, remove unused materials, containers, and equipment and debris.

- B. Installer must advise Contractor of requirements for protection of fireproofing from deterioration and damage during remainder of construction period.

END OF SECTION 07 25 00





## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

- A. This Section may include the following:
  - 1. Adhered membrane roofing system.
  - 2. Cover board.
  - 3. Roof insulation.
  - 4. Substrate board.
- B. Related Sections may include the following:
  - 1. Division 05 Section "Steel Decking" for furnishing acoustical deck rib insulation.
  - 2. Division 06 Section "Rough Carpentry" for wood nailers, curbs, and blocking.
  - 3. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.
  - 4. Division 07 Section "Manufactured Roof Expansion Joints."
  - 5. Division 07 Section "Joint Sealants."

### 1.3 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 "Terminology Relating to Roofing and Waterproofing"; glossary of NRCA's "The NRCA Roofing and Waterproofing Manual"; and the Roof Consultants Institute "Glossary of Roofing Terms" for definition of terms related to roofing work in this Section.
- B. Sheet Metal Terminology and Techniques: SMACNA Architectural Sheet Metal Manual.

### 1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and Flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. Jobsite Safety: Execute all operations and provide a safe work environment in accordance to OSHA standards and regulations. This requirement applies to all contractor personnel, associated subcontractors, workers in other trades, and jobsite visitors.

1. Follow all industry fire prevention guidelines for storage of materials, staging areas, roof access, and application means and methods.
  2. Any applicable local fire codes supersede industry guidelines.
- D. Roofing System Design: Provide a membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE 7. Roof uplift shall meet or exceed a UL I-90.
- E. Roofing System Design: Provide a membrane roofing system meeting the fire resistance rating requirements of System Design No. P719 or as indicated on the drawings for a two-hour fire rated roof system assembly.

#### 1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
1. Flashings and membrane terminations.
  2. Tapered insulation, including slopes.
  3. Insulation fastening patterns.
  4. Sheet layout with perimeter and corner defined.
- C. Samples for Verification: For the following products:
1. Manufacturer's standard sample size of sheet roofing, of color specified, including T-shaped side and end lap seam.
  2. Manufacturer's standard sample size of roof insulation.
  3. Manufacturer's standard sample size of metal termination bars.
  4. Six insulation fasteners of each type, length, and finish.
  5. Six roof cover fasteners of each type, length, and finish.
  6. Six fasteners of each type, length and finish used for complete roofing installation.
- D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
- E. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
1. Submit evidence of meeting performance requirements.
- F. Qualification Data: For Installer and manufacturer.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.
- H. Research/Evaluation Reports: For components of membrane roofing system.
- I. Maintenance Data: For roofing system to include in maintenance manuals.

- J. Warranties: Special warranties specified in this Section.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.
- B. Manufacturer Qualifications: A qualified manufacturer that has UL listing for membrane roofing system identical to that used for this Project.
- C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
- D. Test Reports:
  - 1. Roof drain and leader test or submit plumber's verification.
  - 2. Core cut.
  - 3. Roof deck fastener pullout test.
- E. Source Limitations: Obtain all components from single source roofing manufacturer.
- F. Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
  - 1. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.
  - 2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.
- G. Pre-installation Conference: Conduct conference at Project site. Comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to roofing system including, but not limited to, the following:
  - 1. Meet with Owner, Architect, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
  - 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
  - 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 4. Examine deck substrate, existing conditions and finishes for compliance with requirements, including flatness and fastening.
  - 5. Review structural loading limitations of roof deck during and after roofing.
  - 6. Review Flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
  - 7. Review temporary protection requirements for roofing system during and after installation.
  - 8. Review roof observation and repair procedures after roofing installation.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
  - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.8 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.9 GUARANTEE

- A. Provide manufacturer's system guarantee equal to Johns Manville's Peak Advantage No Dollar Limit Roofing System Guarantee.
  - 1. Single-Source special warranty includes roofing membrane, flashings, roofing membrane accessories, roof insulation, fasteners, and other single-source components of roofing system marketed by the manufacturer.
  - 2. Warranty Period: Fifteen (15) years from date of Substantial Completion.
- B. Installer's Guarantee: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering Work of this Section, including all components of roofing system such as roofing membrane, Flashing, roof insulation, fasteners, and other roofing components supplied by the manufacturer for the following warranty period:
  - 1. Warranty Period: Two (2) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design: Johns Manville Roofing Systems

- B. Equal products by: Carlisle, Mule Hide

## 2.2 THERMOPLASTIC POLYOLEFIN ROOFING MEMBRANE

- A. Fabric-Reinforced Thermoplastic Polyolefin Sheet: ASTM D 6878, uniform, flexible sheet formed from a thermoplastic polyolefin, internally fabric or scrim reinforced. Product: JM TPO
  - 1. Thickness: 60 mils (1.5 mm), nominal.

## 2.3 AUXILIARY MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
  - 1. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's sheet flashing of same material, type, reinforcement, thickness, and color as sheet membrane. Product: JM TPO
- C. Bonding Adhesive: Manufacturer's standard solvent-based bonding adhesive for membrane, and solvent-based bonding adhesive for Flashings. Product: JM TPO Membrane Adhesive (Solvent Based)
- D. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.
- E. Metal Termination Bars: Manufacturer's standard predrilled stainless-steel or aluminum bars, with anchors. Product: JM Termination Systems
- F. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
- G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, battens, T-joint covers, termination reglets, cover strips, and other accessories as required for a complete system.

## 2.4 ROOF INSULATION

- A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Product: ENRGY 3
  - 1. Provide insulation package with R Value greater than an R-19.
  - 2. Provide insulation package with minimum thickness of 1".
  - 3. Install no boards thicker than 1.5". If insulation package required is thicker than 1.5", install in multiple layers.

## 2.5 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- B. Provide factory preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain.
- C. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and provided by roofing system manufacturer.
- D. Cold Fluid-Applied Adhesive: Manufacturer's No VOC, two-component cold fluid-applied adhesive formulated to adhere roof insulation to substrate.
- E. Insulation Cant Strips: ASTM C 728, perlite insulation board.
- F. Wood Nailer Strips: Treated wood nailers as noted on plans.

## 2.6 SUBSTRATE BOARD

- A. Substrate Board: ASTM C 1177/C 1177M, glass-mat, water-resistant, type X, gypsum substrate 5/8 inch (16 mm) thick. Product: Securock or equal.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening substrate panel to roof deck.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
  - 1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
  - 2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
  - 3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Division 05 Section "Steel Decking."
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.3 SUBSTRATE BOARD INSTALLATION

- A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together. Comply with U.L. Assembly indicated.
  - 1. Fasten substrate board to top flanges of steel deck according to recommendations in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
  - 2. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to roofing system manufacturer's written instructions.
  - 3. Comply with U.L. Assembly indicated.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.4 INSULATION INSTALLATION

- A. Coordinate installing roof system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system manufacturer's written instructions for installing roof insulation.
- C. Insulation Cant Strips: Install and secure preformed 45-degree insulation cant strips at junctures of roofing membrane system with vertical surfaces or angle changes greater than 45 degrees per manufacturer's instruction.
- D. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
  - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- E. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 1.5 inches (38 mm) or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
- F. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.



- G. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- H. Mechanically Fastened Insulation: Secure uppermost layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type. Loose lay all other layers below with staggered joints.
  - 1. Fasten according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
  - 2. Fasten to resist uplift pressure at corners, perimeter, and field of roof.
- I. Mechanically Fastened with Subsequent Layers Adhered Insulation: Secure first layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
  - 1. Fasten first layer according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
  - 2. Fasten first layer to resist uplift pressure at corners, perimeter, and field of roof.
  - 3. Install subsequent layers in a cold fluid-applied adhesive.
  - 4. Install subsequent layers in a two-part urethane adhesive.
- J. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.5 COVER BOARD INSTALLATION

- A. Coordinate installing membrane roofing system components so cover board is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system manufacturer's written instructions for installing roof cover board.
- C. Install cover board with long joints of cover board in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with cover board.
  - 1. Cut and fit cover board within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- D. Trim surface of cover board where necessary at roof drains so completed surface is flush and does not restrict flow of water.
  - 1. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- E. Mechanically Fastened Cover Board: Install each layer of cover board and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof cover board to deck type.
  - 1. Fasten according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
  - 2. Fasten to resist uplift pressure at corners, perimeter, and field of roof.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.6 ADHERED ROOFING MEMBRANE INSTALLATION

- A. Install roofing membrane specification ST6RA over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.
- B. Start installation of roofing membrane in presence of membrane roofing system manufacturer's technical personnel.
- C. Accurately align roofing membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Bonding Adhesive: Apply solvent-based bonding adhesive to substrate and underside of roofing membrane at rate required by manufacturer and allow to partially dry before installing roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.
- E. Bonding Adhesive: Apply water-based bonding adhesive to substrate at rate required by manufacturer and immediately install roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.
- F. Mechanically fasten roofing membrane securely at terminations, penetrations, and perimeter of roofing.
- G. Apply roofing membrane with side laps shingled with slope of roof deck where possible.
- H. Seams: Clean seam areas, overlap roofing membrane, and hot-air weld side and end laps of roofing membrane according to manufacturer's written instructions to ensure a watertight seam installation.
  - 1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roofing membrane.
  - 2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
    - a. Remove and repair any unsatisfactory sections before proceeding with Work.
  - 3. Repair tears, voids, and lapped seams in roofing membrane that do not meet requirements.
- I. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.
- J. Install roofing membrane and auxiliary materials to tie in to existing roofing.
- K. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.7 FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply solvent-based bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with sheet flashing.

- D. Clean seam areas and overlap and firmly roll sheet flashings into the adhesive. Weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.
- G. Reinstall Bird Guards in manufacturer's approved adhesive at their original locations.

### 3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.
  - 1. Notify Architect or Owner 48 hours in advance of date and time of inspection.
- C. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### 3.9 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

**END OF SECTION 07 54 20**

1.0 GENERAL

1.01 SCOPE: This Section covers all flashing and sheet metal, other than exposed pre-finished trim, flashing and sheet metal to be furnished.

1.02 SUBMITTALS:

- A. Shop Drawings: Indicate material types, sizes, shapes, thicknesses, finishes, fabrication details, anchors, connections, expansion joints and relation to adjacent work. Details and profiles shall be drawing at full size scale.
- B. Product Data: Indicate product description, finishes and installation instructions, including interface with adjacent materials and surfaces.
- C. Samples: Submit as follows:
  - 1. Special finishes: 6" x 6" samples of manufacturer's standard colors for Architect's color selection.
  - 2. Manufactured items: 1'-0" length in style and finishes specified.

1.03 DELIVERY, STORAGE AND HANDLING:

- A. Handle materials to prevent damage to surfaces, edges and ends of sheet metal items. Reject damaged material and remove from project site.

1.04 JOB CONDITIONS:

- A. Protect prefinished and previously finished surfaces from damage or staining during performance of flashing and sheet metal work. Repair or replace damaged work to original condition.
- B. Prevent accumulation of solder, sealant, bitumen, or other materials on finished or exposed surfaces. Remove misplaced materials immediately.

1.05 WARRANTIES:

- A. Warrant flashing and sheet metal work to be free of defects in materials and workmanship. Warranty period shall be two years.
- B. Finish warranty: Warrant fluoropolymer coating to be free of checking, crazing, or peeling, chalking and fading, in accordance with coating manufacturer's standard warranty.

2.0 PRODUCTS

2.01 SHEET METAL MATERIALS:

- A. Architectural Metals: Shall be .040 pre-finished aluminum where shown on plans and as required for details. Colors shall be selected by the architect. Acceptable manufacturers:
  - 1. MBCI
  - 2. AMS
  - 3. McElroy
  - 4. Morin
  - 5. Approved equal

- B. Pitch Pockets: Shall be manufactured of 16 oz. copper in size as required for conditions. Solder all seams. Provide circular copper covers soldered to or mechanically attached to all penetrations. Covers shall extend 2" beyond all edges.
- C. Parapet Covers: Where indicated, shall be by the metal roofing manufacturer as listed above. Joint covers of same metal shall have a 40 mil TPO membrane strip below them fully adhered to parapet covers in addition to caulk. The covers shall be anchored at the prescribed rate to achieve FM I-120 uplift resistance and in accordance with the wind uplift requirements of IBC2012.
- D. Lead Flashing at Plumbing Vents: Shall be of 4 lb lead turned into vent 1" minimum.

2.02 Fasteners: Same material or compatible with sheet metal being fastened.

- A. Nails: Flathead, needle point, not less than 12 ga. and of sufficient length to penetrate substrate 1" minimum.
- B. Expansion shields: Lead or bronze sleeves.
- C. Screws: Self-tapping type, with round heads.
- D. Bolts: Furnished complete with nuts and washers.
- E. Rivets: Round head, solid shank.
- F. Blind clips and cleats: Same gauge as sheet metal.
- G. Termination Bar: 1" high, continuous.

2.03 FINISHES:

- A. Pre-finished Metals: Manufacturer's standard Kynar 500 finish. Color as selected by architect.
- B. Copper: Natural Finish.

2.04 SHEET METAL FABRICATION:

- A. Fabricate sheet metal work in accordance with approved shop drawings and industry standards. Form sheet metal work with clear, sharp and uniform arises. Hem exposed edges.
- B. Make joints in aluminum sheets less than 0 040" thickness using flat seams, 3/4" in width. Fill seams with exterior sealant. Make joints in thicker sheets using seams or by Tungsten Arc Welding (TIG) or Gas Metal Arc Welding (MIG) process, using appropriate filler alloy.
- C. Provide linear sheet metal items in minimum 10'-0" sections except as otherwise noted. Form flashing using single pieces for the full width. Install coping covers, gravel stops, etc. in symmetrical distances from edges. Verify layouts with the architect prior to installation.

3.0 EXECUTION

3.01 SHEET METAL INSTALLATION:

- A. Install work in accordance with approved shop drawings and industry standards and SMACNA Sheet Metal Practices. Sheet metal items shall be true to line, without buckling, creasing, warp, wind or other deformation in finished surfaces.
- B. Perform field joining of lengths as specified for shop fabrication. Factory form and join interior and exterior corners and similar transactions.
- C. Isolate dissimilar materials to prevent electrolysis. Separate using bituminous paint or roofing felt, or uncured 40 mil membrane waterproofing.
- D. Seaming: Form seams in direction of flow. Seams shall be flatlock with cleats filled with exterior sealant. Lap seams occurring in members sloping 45° or more 4" minimum and bed in flashing cement.
- E. Secure sheet metal items using continuous cleats, clips and blind fasteners as indicated. No exposed face fastening shall be performed.
- F. Fastening:
  - 1. Nails: Confine to one edge only of flashing 1'-0" or less in width. Space Nails at 4" o.c. maximum. Provide neoprene washers for nails.
  - 2. Cleats: Continuous, formed to profile of item being secured.
  - 3. Clips: Minimum 2" wide by 3" long formed to profile of item being secured. Space at 2'-0" o.c. maximum.
- G. Form joints in linear sheet metal to allow for 1/2" minimum expansion at 20'-0" o.c. maximum and 8'-0" from corners. Provide 6" wide backup plate at intersections. Form plates to profile of sheet metal item. Set plate in three beads of sealant in addition to 40 mil uncured Permaply.

END OF SECTION 07 60 00



## PART 1 GENERAL

### 1.01 SECTION INCLUDES

- A. Firestopping and smoke seal systems.
- B. Firestopping of all joints and penetrations in fire-resistance rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

### 1.02 SCOPE

- A. All firestopping on this project is to be installed by a single source subcontractor certified to install through-penetration firestopping systems.
- B. Contractor shall be responsible to coordinate work of all trades to insure that sleeves or core-drilled holes are the proper size to accommodate through penetrating items and minimize number of penetrations in fire-rated assemblies. All voids between sleeves or core-drilled holes and penetrating items shall be firestopped in accordance with this section.
- C. The firestopping manufacturer's representative is required to attend all Overhead and Final Inspections. Contractor is responsible for all communication and coordination with the manufacturer's representative so that they are in attendance.
- D. Contractor shall be responsible for any and all costs associated with any Engineering Judgment Reports as may be required during construction.
- E. The work of this section includes, but is not limited to tested firestop systems used in specific locations as follows:
  - 1. Penetrations for the passage of duct, cable, cable tray, conduit, piping, electrical busways and raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor/ceiling assemblies), and vertical service shaft walls and partitions.
  - 2. Safing slot gaps between edge of floor slabs and curtain walls.
  - 3. Openings between structurally separate sections of walls or floors.
  - 4. Gaps between the top of walls and ceilings or roof assemblies.
  - 5. Expansion joints in walls and floors.
  - 6. Openings and penetrations in fire-rated partitions or walls containing fire doors.
  - 7. Openings around structural members which penetrate floors or walls.

### 1.03 DEFINITIONS

- A. Firestopping: Material or combination of materials used to retain integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke, and hot gases through penetrations in, or construction joints between, fire rated wall and floor assemblies.
- B. Smoke Seals: Material or combination of materials used to resist the passage of smoke at joints and penetrations.
- C. Top-of-Wall Sounds Seals: For top-of- wall conditions at walls indicated as sound walls, use the same material or combination of materials used to resist the passage of smoke at joints and penetrations.

### 1.04 RELATED REQUIREMENTS

- D. Section 03 31 00 - Cast-In-Place Concrete
- E. Section 04 20 00 - Unit Masonry
- F. Section 07 21 00 - Thermal Insulation
- G. Section 09 26 00 - Gypsum Wallboard Assemblies



### 1.05 REFERENCE STANDARDS

- A. ANSI/UL 2079 - Tests for Fire Resistance of Building Joint Systems
- B. ASTM E 84, "Standard Test Method for Surface Burning Characteristics of Building Materials"
- C. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2009c.
- D. ASTM E 814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops; 2009.
- E. ASTM E 1966 - Standard Test Method for Fire Resistive Joint Systems.
- F. ASTM E 2174 - Standard Practice for On-site Inspection of Installed Firestops.
- G. ASTM E 2307, "Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-story Test Apparatus"
- H. IFC (International Firestop Council) - Guidelines for Evaluating Firestop Systems Engineering Judgements.
- I. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- J. FM 4991 - Approval of Firestop Contractors; Factory Mutual Research Corporation; 2001.
- K. FM P7825 - Approval Guide; Factory Mutual Research Corporation; current edition.
- L. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; [www.aqmd.gov](http://www.aqmd.gov).
- M. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.
- N. UL 1479, "Fire Tests of Through-Penetration Firestops"

### 1.06 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate installation of firestopping among all trades on the project. All firestopping throughout the building shall utilize the same manufacturer's products to ensure compatibility and consistency of penetration seals. If multi-prime contractors are awarded different scopes of work for the project, the same manufacturer of firestopping material will be decided upon at the pre-construction meeting. A coordination meeting will be held with all contractors prior to beginning firestopping work.
- B. Preinstallation Meeting: Convene one week before starting work of this section.
  - 1. Review preparation and installation procedures. Related work shall be coordinated and scheduled to provide proper sequence of work.
  - 2. Include installer, manufacturer's representative, General Contractor, Construction Manager, Architect, associated trades that will be performing firestopping work, Owner and others directly concerned with penetrations and joints in fire-resistive construction.
  - 3. Construction Manager shall record discussions of conference, decisions, agreements and disagreements reached and furnish a copy to each attendee.
  - 4. Agenda shall include allowable size of holes in fire resistive construction, training requirements for installation of firestopping, coordination of related trades and code requirements applying to firestopping.

### 1.07 SUBMITTALS

- A. See Section 01 33 00 - Submittal Procedures, for submittal procedures.
- B. Schedule of Firestopping: Each contractor is responsible for submitting a list of each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number proposed to be used on the project.

- C. Product Data: Provide data on product characteristics, performance ratings, limitations, and Material Safety Data Sheets.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements and are suitable for the use intended.
- F. Installer Qualifications: Provide evidence that installing contractor and actual field installation mechanics comply with the qualifications listed in paragraph 1.08.C below. Certificates of qualifications of the installers are to be submitted as part of the submittal package.
- G. Failure to provide any of the submittal information listed above will be cause for rejection of the submittal. NO EXCEPTIONS. The architect will not review an incomplete submittal.

#### 1.08 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the specified fire ratings when tested in accordance with methods indicated.
  - 1. Listing in the current-year classification or certification books of UL, FM, or ITS (Warnock Hersey) will be considered as constituting an acceptable test report.
    - a. For those firestop applications that exist for which no tested system is available through any manufacturer, a manufacturer's engineering judgment derived from similar tested system designs or other tests will be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineering judgement drawings must follow requirements set forth by the International Firestop Council.
  - 2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at [www.icc-es.org](http://www.icc-es.org) will be considered as constituting an acceptable test report.
  - 3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.
  - 4. Firestop System installation must meet requirements of ASTM E-814, ASTM E1966, or ANSI/UL 2079, tested assemblies that provide a fire rating equal to that of construction being penetrated.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
  - 1. With minimum 3 years experience installing work of this type.
  - 2. Able to show at least 5 satisfactorily completed projects of comparable size and type.
  - 3. Installer shall be licensed, or otherwise qualified by the firestopping manufacturer as having been provided the necessary training by the manufacturer (not by a distributor or agent) to install manufacturer's products per specified requirements. A supplier's willingness to sell its firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer. Certificates of qualifications of the installers are to be submitted as part of the submittal package.
- D. Proposed firestop materials and methods shall conform to applicable governing codes having local jurisdiction.
- E. Firestop Systems do not re-establish the structural integrity of load bearing partitions/assemblies, or support live loads and traffic. Installer shall consult the structural engineer prior to penetrating any load bearing assembly.
- F. Single Source: All firestopping products should be obtained from a single manufacturer and installed as an approved system as recommended and tested by the manufacturer.
  - 1. Subcontractors that are responsible for penetrations through fire-resistive and

smoke-resistive construction in the course of performing their work shall comply with this section for all firestopping.

2. Products used for firestopping and smoke seals shall be by the same manufacturer throughout the building for all trades. All trades are responsible to coordinate with the Building and Finishes Contractor and Construction Manager for all firestopping work.

#### 1.09 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials undamaged in manufacturer's clearly labeled, unopened containers, identified with brand, type, and UL label where applicable.
- B. Coordinate delivery of materials with scheduled installation date to allow minimum storage time at jobsite.
- C. Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements, including temperature restrictions.
- D. Comply with recommended procedures, precautions or remedies described in material safety data sheets as applicable.
- E. Do not use damaged or expired materials.

#### 1.10 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

#### 1.11 COORDINATION

- A. Coordinate construction of openings, penetrations and construction joints to ensure that the fire stop systems are installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration fire stop systems. Coordinate construction and sizing of joints to ensure that fire-resistive joint systems are installed according to specified requirements.
- C. Coordinate fire stopping with other trades so that obstructions are not placed in the way prior to the installation of the fire stop systems.
- D. Do not cover up through-penetration fire stop and joint system installations that will become concealed behind other construction until each installation has been examined by the Owner's testing and inspection agency and it has been determined that all deficiencies have been corrected.

### PART 2 PRODUCTS

#### 2.01 FIRESTOPPING, GENERAL:

- A. Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.
- B. Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.
- C. Provide materials and systems fully capable of maintaining an effective barrier against gases,

flame and smoke.

- D. Firestopping materials are either "cast-in-place" (integral with concrete placement) or "post-installed." Provide cast-in-place firestop devices prior to concrete placement.

## 2.02 ACCEPTABLE MANUFACTURERS

- A. Hilti, Inc., Tulsa, Oklahoma
  - 1. (800) 879-8000
- B. 3M Fire Protection Products, St. Paul, Minnesota
  - 1. (612) 736-0203
- C. Tremco, Dunwoody, GA
  - 1. (800) 852-8173
- D. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.03 FIRESTOPPING SYSTEMS

- A. Firestopping:
  - 1. Fire Ratings: Use any system listed by UL or FM or tested in accordance with ASTM E 814 that has F Rating equal to fire rating of penetrated assembly and T Rating Equal to F Rating (horizontal conditions only) and that meets all other specified requirements.
    - a. Fire Ratings: See drawings for required systems and ratings.
  - 2. Provide a firestop system with an Assembly Rating as determined by UL 2079 which is equal to the time rating of construction joint assembly.

## 2.04 MATERIALS

- A. Use only firestop products that have been UL 1479 or ASTM E 814, or UL 2079, tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.
- B. Firestopping Sealants: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.
- C. Elastomeric Silicone Firestopping: Single component silicone elastomeric compound and compatible silicone sealant;
  - 1. Manufacturers:
    - a. 3M Fire Protection Products; Product Fire Barrier CP25, Fire Barrier FD 150+, Fire Barrier IC 15WB+: [www.3m.com/firestop](http://www.3m.com/firestop).
    - b. Hilti, Inc; Product CP606 Flexible Firestop Sealant, Hilti CP 604 Self-leveling Firestop Sealant or CP601S Elastomeric Firestop Sealant as applicable to conditions: [www.us.hilti.com](http://www.us.hilti.com).
    - c. Tremco, Inc.; Products TREMStop Flexible Acrylic Sealant, Fyre-Sil Fire Resistant Silicone Sealant, Fyre-Sil S/L Self-Leveling Fire Resistant Silicone Sealant, Fyre-Shield Fire Resistant Ceramic Based Sealant: [www.tremcosealants.com](http://www.tremcosealants.com).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Smoke Seal Joints, Top-of-Wall Sound Seal Joints, and Penetrations: Sealant compound to resist the passage of smoke in joints and penetrations.
  - 1. Manufacturers
    - a. 3M Fire Protection Products; Product Silicone RTV Foam, Fire Barrier CP25, Fire Barrier FD 150+: [www.3m.com/firestop](http://www.3m.com/firestop).
    - b. Hilti, Inc; Product FS-ONE Intumescent Firestop Sealant, CP506 Smoke and Acoustic Sealant, CP572 Smoke and Acoustic Spray, CP606 Flexible Firestop Sealant, Hilti CP 604 Self-leveling Firestop Sealant or CP601S Elastomeric Firestop Sealant as

- applicable to conditions; [www.us.hilti.com](http://www.us.hilti.com).
    - c. Thermafiber, Inc; Product - Thermafiber Smoke Seal Compound:  
[www.thermafiber.com](http://www.thermafiber.com).
    - d. Tremco, Inc.; Products TREMStop Flexible Acrylic Sealant, TREMStop Acrylic SP Sealant, Fyre-Sil Fire Resistant Silicone Sealant, TREMStop Smoke and Sound Sealant, TREMStop Smoke and Sound SP; [www.tremcosealants.com](http://www.tremcosealants.com).
    - e. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Fiber Firestopping: Mineral fiber insulation used in conjunction with elastomeric surface sealer forming airtight bond to opening. Provide products as required to meet tested conditions.
  - 1. ASTM C 612; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E 84.
  - 2. Provide foil facing on one side; with flame spread index of 25 or less, when tested in accordance with ASTM E 84.
  - 3. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E 84.
  - 4. Board Size: 48 x 48 inch.
  - 5. Board Thickness: 1 inch.
  - 6. Density: 8.0 lb/cu ft.
  - 7. Manufacturers:
    - a. Hilti, Inc.; Products Hilti CP 777 Speed Plugs or Hilti CP 767 Speed Strips
    - b. Thermafiber, Inc; Product Thermafiber Safing Insulation, Thermafiber FireSpan 90:  
[www.thermafiber.com](http://www.thermafiber.com).
    - c. Tremco, Inc.; Product: Tremstop FS Blanket: [www.tremcofirestop.com](http://www.tremcofirestop.com).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
- G. Firestop Devices - Wrap Type: Mechanical device with incombustible filler and sheet stainless steel jacket and collar, intended to be installed after penetrating item has been installed;
  - 1. Manufacturers:
    - a. 3M Fire Protection Products; Product Fire Barrier FS-195 Wrap/Strip:  
[www.3m.com/firestop](http://www.3m.com/firestop).
    - b. Hilti, Inc; Product CP 648E/CP648S Wrap Strips, CP 643N Firestop Collar, CP 644 Firestop Collar: [www.us.hilti.com](http://www.us.hilti.com).
    - c. Tremco, Inc. Product TREMStop WS, TREMStop D, TREMStop MCR
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
- H. Fire Barrier Spray at construction joints, such as top of fire-rated walls and sound walls:
  - 1. Manufacturers:
    - a. 3M Fire Protection Products; Product 3M FireDam Spray 100: [www.3m.com/firestop](http://www.3m.com/firestop)
    - b. Hilti, Inc.; Product CP672 Speed Spray or CFP-S WB Firestop Joint Spray:  
[www.us.hilti.com](http://www.us.hilti.com).
    - c. Tremco, Inc.; Product TREMStop Acrylic SP Sprayable Flexible Acrylic Sealant, DYmeric, DYmonic, DYmeric 511, THC 906.
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
  - 2. Firestop Devices - Cast-In Type: Sleeve and sealing material, intended to be cast in concrete floor forms or in concrete on metal deck, not requiring any additional materials to achieve penetration seal.
    - a. Durability and Longevity: Permanent.
    - b. Manufacturers:
      - 1) 3M Fire Protection Products: [www.3m.com/firestop](http://www.3m.com/firestop).
      - 2) Hilti, Inc; Product CP 680 Firestop Cast-in Device: [www.us.hilti.com](http://www.us.hilti.com).
      - 3) Substitutions: See Section 01 60 00 - Product Requirements.
- I. Intumescent Putty: Compound that expands on exposure to surface heat gain;
  - 1. Manufacturers:
    - a. 3M Fire Protection Products; Product Fire Barrier Moldable Putty or CS 195 Composite

- Sheet: [www.3m.com/firestop](http://www.3m.com/firestop).
- b. Hilti, Inc; Product CP618 Firestop Putty Stick or CP 658T Firestop Plug:  
[www.us.hilti.com](http://www.us.hilti.com).
  - c. Tremco, Inc.; Product TREMStop MP, TREMStop Electrical Box Insert,
  - d. Substitutions: See Section 01 60 00 - Product Requirements.
- J. Reusable Firestopping: Removable intumescent compressible shapes, pillows, or blocks specifically tested in removable configuration;
- 1. Manufacturers:
    - a. Hilti, Inc; Product FS657 Fire Block, CP 675T Firestop Board, CP 658T Firestop Plug:  
[www.us.hilti.com](http://www.us.hilti.com).
    - b. 3M Fire Protection Products; Product Fire Barrier Pass-Through Products:  
[www.3m.com/firestop](http://www.3m.com/firestop).
    - c. Tremco, Inc; Product TREMStop QuickComm, TREMStop PS, Fyre-Can Sleeve
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
- K. Trowelable Firestopping for complex penetrations:
- 1. Manufacturers"
    - a. 3M Fire Protection Products; Product Fire Barrier Mortar: [www.3m.com/firestop](http://www.3m.com/firestop).
    - b. Hilti, Inc; Product CP637 Trowelable Firestop Compound, CP 637 Firestop Mortar:  
[www.us.hilti.com](http://www.us.hilti.com).
    - c. Tremco, Inc; Product TREMStop Fire Mortar; [www.tremcosealants.com](http://www.tremcosealants.com).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
- L. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.
- M. Other Materials: As required for a complete and proper installation, compatible with firestopping materials.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify openings are ready to receive the work of this section.
  - 1. Verify penetrations are properly sized and in suitable condition for application of materials.
  - 2. Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestopping.
  - 3. Do not proceed until unsatisfactory conditions have been corrected.

### 3.02 PREPARATION

- A. Schedule installation of firestopping after completion of penetrating items but prior to covering or concealing of work.
- B. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter that could adversely affect bond of firestopping material.
- C. Remove incompatible materials that could adversely affect bond.
- D. Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.
- E. Install backing materials to arrest liquid material leakage.

### 3.03 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

1. Seal all holes or voids made by penetrations and all joints to ensure an air and water resistant seal, capable to withstand compression, extension and joint movement.
  2. Consult with mechanical engineer, project manager, and damper manufacturer prior to installation of UL firestop systems that might hamper the performance of fire dampers as it pertains to duct work.
  3. Protect materials from damage on surfaces subjected to traffic.
  4. Tool or trowel exposed surfaces to a neat finish. Remove excess materials promptly as work progresses and at completion.
- B. Do not cover installed firestopping until inspected by authority having jurisdiction.
- C. Coordinate with mechanical engineer and project manager prior to installation of UL firestop systems that might hamper the performance of fire dampers as it pertains to duct work.
- D. Contractor shall be responsible to oversee work of all trades to insure that sleeves or core-drilled holes are the proper size to accommodate through penetrating items.
- E. Install labeling required by code.

#### 3.04 IDENTIFICATION/LABELING (See attached example)

- A. Identify through-penetration firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. For plastic labels, use self-adhering type with adhesives capable of permanently bonding labels to surfaces on which labels are placed and, in combination with label material, will result in partial destruction of label if removal is attempted. Include the following information on labels:
1. The words "Warning - Through-Penetration Firestop System - Do Not Disturb. Notify Building Management of Any Damage."
  2. Contractor's name, address, and phone number.
  3. Through-penetration firestop system designation of applicable testing and inspecting agency.
  4. Date of installation.
  5. Through-penetration firestop system manufacturer's name.

#### 3.05 CLEANING

- A. Clean adjacent surfaces of firestopping materials.
- B. Remove temporary dams after initial set of firestopping and smoke seal materials.
- C. Remove equipment, materials and debris, leaving area in undamaged, clean condition.

#### 3.06 PROTECTION

- A. Protect adjacent surfaces from damage by material installation.
- B. Patch and repair firestopping damaged by cutting or penetrating of existing firestop systems already installed.

#### 3.07 FIELD QUALITY CONTROL

- A. Keep areas of work accessible until inspection by applicable authorities.
- B. Inspection of through-penetration firestopping shall be performed in accordance with ASTM E 2174 "Standard Practice for On-Site Inspection of Installed Firestops".
- C. Quantity stated in ASTM E2174 or 10% of the installed firestopping (whichever is greater) shall be destructively tested to confirm that the installation is installed in accordance with the contract

documents. The Contractor shall be responsible to repair all firestopping that is damaged during testing procedures at no additional cost to the Owner.

- D. If additional testing is required due to unsatisfactory results, then the Contractor shall be responsible for the costs for retesting in compliance with Section 01 45 00 - Quality Control.

END OF SECTION 07 84 00





# WARNING

This opening has been sealed with the following 3M™ Fire Protection Product(s) \_\_\_\_\_

**DO NOT REMOVE!**

To maintain UL, Intertek or other third-party classification in retrofiting, reseal with 3M™ Fire Protection Products **ONLY!**

Installer's Name \_\_\_\_\_

Installation Company \_\_\_\_\_

Address \_\_\_\_\_ Phone# \_\_\_\_\_

System # \_\_\_\_\_ Hr. Rating \_\_\_\_\_

Date \_\_\_\_\_ Job/Ref. # \_\_\_\_\_

Warning-Through-penetration Firestop System - Do Not Disturb  
Notify Building Management of Any Damage.

1.0 GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 Specification sections, apply to work of this section.

1.02 SCOPE OF WORK

- A. Work includes sealing (caulking) of joints where indicated on drawings, specified herein, and where required for a complete weather tight installation. Typical locations include, but are not necessarily limited to, the following:
  - 1. Control and Expansion Joints.
  - 2. Metal Cap Flashings
  - 3. Where one partition or wall abuts another and is not structurally bonded.

1.03 DEFINITIONS:

- A. Sealant: A weatherproof elastomer used in filling and sealing joints, having properties of adhesion, cohesion, extendibility under tension, compressibility and recovery; shall be designed to make joints air and water tight. Material is designed generally for application to joints at exterior of structures and for other joints subject to movement.
- B. Caulking compound: A material used in filling joints and seams, having properties of adhesion and cohesion; shall not be required to have extensibility and recovery properties, usually applied to joints at interior of structures.
- C. Caulk: The process of filling joints, without regard to type of material.
- D. Joint failure: A caulked joint exhibiting one or more of the following characteristics:
  - 1. Leaks air and/or water
  - 2. Sealant migrates
  - 3. Sealant loses adhesion
  - 4. Sealant loses cohesion
  - 5. Sealant does not cure
  - 6. Sealant discolors
  - 7. Sealant stains adjacent work
  - 8. Sealant develops bubbles, air pockets or voids.

1.04 SUBMITTALS:

- A. Manufacturer's Data: Submit two copies of manufacturer's specifications, recommendations and installation instructions for sealant and associated miscellaneous material required. Include manufacturer's published data, or letter of certification, or certified test laboratory report indicating that material complies with requirements and is intended generally for applications shown. Show by transmittal that one copy of each recommendation and instruction has been distributed to Installer.
- B. Approval of Applicator: A letter on manufacturer's letterhead signed by an active company administrator certifying that applicator is approved at the time of bidding by manufacturer.

C. Color Samples:

1. Submit samples of manufacturer's standard and special colors as indicated at least 30 days prior to commencement of application.
2. Samples shall be actual materials or literature depicting actual material colors. Architect reserves the right to reject work not in conformance with selected colors, based upon samples submitted.
3. Should Contractor select a manufacturer meeting specified requirements, except for minimum color range requirements, he shall be responsible for furnishing special colors within range requirements. Special colors shall be submitted for Architect's acceptance.

D. Warranty: A warranty from the applicator upon completion guaranteeing the water tightness of the sealant installation for a period of five (5) years assuming responsibility for prompt and complete repair of any leaks occurring during this period. In addition, provide a letter on the manufacturer's letterhead at project close-out stating that work has been accomplished in accord with this specification and with manufacturer's application directive.

1.05 DELIVERY, STORAGE AND HANDLING

A. Comply with manufacturer's instruction regarding environmental conditions under which materials may be stored.

1.06 JOB CONDITIONS:

A. Weather Conditions

1. Install no materials under adverse weather conditions, or when temperatures are below or above those recommended by the manufacturer.
2. Proceed with work only when forecasted weather conditions are favorable for joint cure and development of high early bond strength.
3. Wherever joint width is affected by ambient temperature variations, install materials only when temperatures are in lower third of manufacturer's recommended installation temperature. Coordinate time schedule with Contractor to avoid delay of project.

B. Protection of adjacent surfaces:

1. Protect by applying masking materials or manipulating application equipment to keep materials in joint. If masking materials are used, allow no tape to touch cleaned surfaces to receive sealant. Remove tape immediately after caulking, before surface skin begins to form.
2. Remove misapplied sealants from surfaces using solvents and methods recommended by manufacturer.
3. Restore surfaces from which sealants have been removed to original condition and appearance.

1.07 SERVICES OF MANUFACTURER'S REPRESENTATIVE

A. Manufacturer of sealant materials shall provide the services of a factory representative who shall conduct on site check of caulking work to determine compliance with manufacturer's application directive.

## 1.08 APPLICATORS

- A. Subcontract the caulking and sealing work to a firm experienced in the application of the types of materials required, employing skilled tradesmen for the work and who are approved by the manufacturer of the materials.

## 2.0 PRODUCTS

### 2.01 MATERIALS

- A. Sealant for Exterior Work: Provide two-component Polyurethane-based elastomeric sealant complying with FS TT-S-00227E, Type II (Non-Sag), Class A, and ANSI A116.1.

These materials shall be of sufficient strength and hardness to withstand stiletto heel traffic without damage or deterioration of sealer system.

DYNATROL II	by Pecora Corporation
SONOLASTIC NP II	by Sonneborn-Contech
DYMERIC II	by Tremco

- B. Caulking for Interior Work: Provide one-part acrylic latex polymer non-sag Caulking Compound complying with ASTM C834.

Products complying with requirements include, but not necessarily limited to:

AC-20	by Pecora Corporation
ACRYLIC LATEX	by Tremco
SONOLAC	by Sonneborn-Contech

- C. Sealant for Interior Horizontal Joints subject to Foot Traffic: Provide two part, cold-applied, chemically-curing, horizontal grade, elastomeric polyurethane Joint Sealant, complying with ASTM D 1850 and FS TT-S-00227E (3), Class A, Type 1.

Products complying with requirements include, but not necessarily limited to:

UREXPAN NR-200	by Pecora Corporation
THC-900	by Tremco
SONOLASTIC	by Sonneborn-Contech

- D. Fire stopping Caulks and Sealants as follows apply to all divisions of these specifications:

1. Penetration Sealants/Putty: Noncombustible penetrating items (metal conduits, steel pipe, EMT, copper):

- a. Biostop 500
- b. Dow Corning Firestop Sealants 2000
- c. 3M Brand "Fire Barrier" Caulk CP-25 and CP-25WB.

2. Intumescent Firestop Materials for use at openings and sleeves involving combustible penetrating items (plastic pipe, insulated pipe, or PVC coated, flexible cable).

- a. Biofireshield wrap strip
- b. Dow Corning Firestop Intumescent Wrap Strip 2002

c. 3M Brand "Fire Barrier" FS-195 Wrap Strip

3. UL Classification: Provide material classified by UL to provide Fire stopping equal to time rating of construction being penetrated.
4. Fire stopping materials shall be asbestos-free, emit no toxic or combustible fumes, and be capable of maintaining an effective barrier against flame, smoke, water and toxic gasses in compliance with U.L standards.
5. Fire stopping materials/systems shall be flexible to allow for normal movement of building structure and penetrating item(s) without affecting the adhesion or integrity of the system.
6. Fire stopping sealants shall be recessed and have acrylic caulking applied over the surface to allow for painting. Verify coverage of acrylic latex caulk with manufacturer.

2.02 COLORS:

- A. As selected by Architect from manufacturer's standard selection.
- B. Colors of caulk are multicolor and shall match masonry, windows, metal roof and other separate finishes as selected by the architect.

2.03 COMPATIBILITY:

- A. Before purchase of the specified sealant, investigate its compatibility with the joint surfaces, joint fillers and other materials behind or below the joint in the construction. Provide only materials (manufacturer's recommended variation of the specified materials) which are known to be fully compatible with the actual installation conditions, as shown by the manufacture's published data or certification.

2.04 ACCESSORY MATERIALS:

- A. Joint Cleaner: Type recommended by sealant manufacturer for substrates indicated.
- B. Joint Primer/Sealer: Provide type of joint primer/sealer recommended by sealant manufacturer for joint surfaces to be primed or sealed.
- C. Bond Breaker Tape (BB-Tp): Polyethylene tape or other plastic tape as recommended by sealant manufacturer to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self adhesive tape where applicable.
- D. Sealant Backer Rod: Compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam as recommended by sealant mfg. for compatibility with sealant material. Provide size and shape of rod to control joint depth, break bond at bottom of joint, form optimum shape of bead on back size to minimize possibility of extrusion when joint is compressed.
- E. Tooling agent: Agent recommended by sealant manufacturer to insure contact of material with inner joint faces.

- F. Divider strips: Synthetic rubber or closed cell synthetic foam not less than 1/6" thick and full depth of sealant; approved by manufacturers of dissimilar materials as being compatible with each other.

### 3.0 EXECUTION

#### 3.01 JOB MOCKUP:

- A. Prepare, caulk and finish one sample of each joint condition.
- B. Sample joints shall be accepted by Architect prior to beginning work. Retain approved samples as a standard for work.
- C. Only neat tooled joints will be accepted.

#### 3.02 JOINT SURFACE PREPARATION

- A. Installer must examine joint surfaces, backing and anchorage of units forming sealant rabbet and conditions under which sealant work is to be performed and notify Contractor in writing of any conditions detrimental to proper and timely completion of work. Do not proceed with sealant work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.
- B. Clean joint surfaces immediately before caulking joints. Remove dirt, insecure coatings, moisture and other substances which could interfere with bond
- C. Etch concrete and masonry joint surfaces to remove excess alkalinity, unless sealant manufacturer's product data indicates that alkalinity does not interfere with bond and performance. Etch with 5% solution of muriatic acid; neutralize with dilute ammonia solution; rinse with clean water and allow to dry before caulking.
- D. Roughen joint surfaces on vitreous coated and similar non-porous materials, unless sealant manufacturer's product data indicates equal bond strength as porous surfaces. Rub with fine abrasive cloth or wool to produce dull sheen.

#### 3.03 APPLICATION

- A. Comply with Sealant Manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.
- B. Prime or Seal joint surfaces where recommended by sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.
- C. Install Sealant Backer Rod for all caulking materials, except where recommended to be omitted by sealant mfg. for application indicated.
- D. Employ installation techniques which will ensure that sealants are deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joints to form a slight cove, so that joint will not trap moisture and dirt. Tool sealant as recommended by sealant manufacturer.
- E. Do not allow materials to overflow or spill onto adjoining surfaces. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces.

- F. Remove excess and misplaced materials as work progresses. Clean adjoining surfaces to eliminate evidence of misplaced materials, without damage to adjacent surfaces or finishes.
- G. Cure Sealants in compliance with manufacturer's product data to obtain high early bond strength, internal cohesive strength and surface durability.
- H. Install sealants to depths as shown, or, if not shown, as recommended by the sealant manufacturer.
- I. Installer shall advise contractor of procedures required for protection of sealants and caulking compounds during construction period, so that they will be without deterioration or damage (other than normal weathering) at time of Owner's acceptance.

END OF SECTION 07 90 00

- 1.0 GENERAL:
- 1.1 RELATED DOCUMENTS: Drawings and general provisions of Contract, including Divisions 0 (Bidding and Contract Documents), and 1 (General Requirements) apply to work specified in this section.
- 1.2 SCOPE: This section covers hollow metal work, complete. The extent of hollow metal work is shown on drawings and in schedules.
- 1.3 QUALITY ASSURANCE: Provide custom hollow metal work manufactured by a single firm specializing in the production of this type of work. Manufacturers offering products to comply with requirements of this specification include the following:
- Amweld  
Curries/Assa Abloy  
Republic
- 1.4 APPLICABLE STANDARDS: Hollow metal doors and frames shall be as manufactured by a member of the Steel Door Institute in accordance with the Institute's "Recommended Standard Steel Doors and Frame Details" (S.D.I. 111).
- 1.5 FIRE-RATED ASSEMBLIES: Wherever a fire-resistance classification is shown or scheduled for hollow metal work, provide fire-rated hollow metal doors and frames investigated and tested as a fire door assembly, complete with type of fire door hardware to be used. Identify each fire door and frame with UL labels, indicating applicable fire rating of both door and frame.
- A. Standard: Construction of assemblies to comply with NFPA Standard No. 80 and as herein specified.
- B. Temperature Rise Rating: At stairwell enclosures, provide doors which have a Temperature Rise Rating of not more than 450 degrees F. maximum on the unexposed side to 30 minutes of standard fire test exposure.
- 1.6 PRODUCT DELIVERY, STORAGE AND HANDLING: Deliver hollow metal work cartoned or crated to provide protection during transit and job storage. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided the finish items are equal in all respects to new work and are acceptable to the Architect; otherwise, remove and replace damaged items as directed. Store hollow metal units on raised platforms in vertical positions with blocking between units to allow air circulation. Keep stored material covered and protected from damage.
- 1.7 JOB CONDITIONS: The Installer must examine the substrate and conditions under which hollow metal work is to be installed and notify the Contractor in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.
- 1.8 SUBMITTALS:
- A. Manufacturer's Data: For information only, submit two copies of manufacturer's specifications for fabrication and shop painting and installation instructions.
- B. Shop Drawings: Submit shop drawings for the fabrication and erection of custom hollow metal doors and frames. Include details of each frame type, thickness of metal, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements and details of joints, fastenings, anchors and connections.



2.0 PRODUCTS:

2.1 BASIC MATERIALS:

- A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A569 and ASTM A568.
- B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, Type E, matte finish, complying with ASTM A366 and ASTM A568. Provide stretcher-leveled standard of flatness for facing sheets of doors.
- C. Metallic Coated Steel Sheets: Commercial Steel (CS), Type B; with minimum **A60 (ZF180)** metallic coating, complying with ASTM A653/A 653M,
- D. Supports and Anchors: Provide units fabricated of not less than 16 gauge sheet steel. Galvanize after fabrication where units will be built into exterior walls, complying with ASTM A153, Class B.
- E. Inserts, Bolts and Fasteners: Provide manufacturer's standard units, except hot-dip galvanize all items to be built into exterior walls, complying with ASTM A153.
- F. Shop-Applied Paint: Provide a rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints, complying with FS TT-P-57 (Type II), TT-P-636, or TT-P-664. Paint galvanized surfaces with a zinc dust-zinc oxide primer complying with FS TT-P-641, Type II.

2.2 FABRICATION, GENERAL: Fabricate hollow metal units to be rigid, neat in appearance and free from defects, warp or buckle. Accurately form metal to required sizes and profiles. Wherever practicable, fit and assemble units in the manufacturer's plant. Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at the project site. Weld exposed joints continuously, grind, dress and make smooth, flush and invisible. Metallic filler to conceal manufacturing defects is not acceptable.

- A. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips or Jackson heads for exposed screws and bolts.
- B. Clearance: Single swing doors shall have not more than a 1/8" clearance at jambs and heads, 1/8" clearance at meeting edges of pairs of doors, and 3/8" clearance at bottom. All dimensions are nominal and subject to recognized manufacturer's tolerance. The lock edges of doors shall be so designed as to provide proper operating clearance. Special bottom clearance shall be provided where thresholds require it.
  - 1. Fire rated doors shall have clearances as specified in NFPA Standard No. 80.
- C. Finish Hardware Preparation: Prepare hollow metal units to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling and tapping in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 "Specifications for Door and Frame Preparation".
  - 1. Reinforce hollow metal Units to receive surface applied hardware. Drilling and tapping for surface applied finish hardware may be done at project site.

2. Locate finish hardware as shown on final shop drawings, or if not shown, in accordance with "Recommended Location for Building Hardware", published by the National Builders' Hardware Association.
  3. Fire-rated openings shall have been prepared for hardware in a manner that will not compromise the required fire rating.
- D. Shop Painting:
1. Clean, treat and paint all surfaces of fabricated hollow metal units, including galvanized surfaces, whether concealed or exposed in the finished work.
  2. Clean steel surfaces of all mill scale, rust, oil, grease, dirt and other foreign materials before the application of the shop coat of paint. Remove mill scale and rust by hand tool methods complying with SSPC-SP 2 and solvent clean all metal complying with SSPC-SP 1.
  3. Apply pretreatment to cleaned metal surfaces, using cold phosphate solution (SSPC-PT 2), hot phosphate solution (SSPC-PT 4) or basic zinc chromate-vinyl butyral solution (SSPC-PT 3).
  4. Apply shop coat of prime paint within the time limits recommended by the pretreatment manufacturer. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 2.0 mils.
- 2.3 FRAMES: Provide hollow metal frames for doors, transoms, side-lights, view window, borrowed lights and other openings, in sizes and profiles as indicated. All exterior hollow metal frames must be hot dipped galvanized.
- A. General: Pressed steel frames for doors, where indicated, shall be combination buck, frame and trim type. Frames shall be welded type with mitered head and jamb members. Corners shall be reinforced and have continuous welds. Exposed welds shall be filled and ground smooth to a level surface without dishing.
  - B. Frame Sheet Steel Thickness: The thickness of sheet metal used in constructing or fabricating frames shall be 14 gauge for single interior rated and non-rated frames and 12 gauge for all pairs of doors interior and exterior and single frames at exterior doors. Fabricate frames concealed stiffeners, reinforcement, edge channels louvers and moldings from either cold-rolled or hot-rolled steel at fabricator's option.
  - C. Mullions and Transom Bars: Provide closed or tubular mullions and transom bars where indicated. Fasten mullions and transom bars at crossing and to jambs by butt welding. Reinforce joints between frame members with concealed clip angles or sleeves same metal and thickness as frame. Where installed in masonry, leave vertical mullions in frames open at the top so they can be filled with grout.
    1. For fire-rated openings, do not provide a mullion or astragal at the meeting edges of a pair of doors for openings rated up to 90 minutes. See Section 082100 - "Wood Doors" for edge treatment of pairs of wood doors.
  - D. Wall Anchors: Furnish wall anchors as required to secure frames to adjacent construction, formed of not less than 18 gauge galvanized steel.

1. Masonry Construction: Adjustable, flat or corrugated or perforated, T-shaped to suit frame size with leg not less than 2" wide by 10" long. Furnish at least three anchors per jamb.
  2. Metal Stud Partitions: Insert type with notched clip to engage metal stud, welded to back of frame. Provide at least three anchors for each jamb for frames.
- E. Floor Anchors: Provide floor anchors for each jamb and mullion which extends to floor, formed of not less than 16 gauge galvanized steel sheet, as follows:
1. Monolithic Concrete Slabs: Clip type anchors, with two holes to receive fasteners, welded to bottom of jambs and mullions.
- F. Structural Reinforcing Members: Provide structural reinforcing members as part of frame assembly, where indicated at mullions, transoms, or other locations which are to be built into frame.
- G. Head Reinforcing: For frames over 4'-0" wide, provide two continuous steel angles not less than 2" x 2" x 12 gauge and width of opening, welded to back of frame at head, unless otherwise shown.
- H. Spreader Bars: Provide two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- I. Rubber Door Silencers: Drill stops to receive three silencers on single-door frames and four silencers on double-door frames. Install plastic plugs to keep holes clear during construction.
- J. Plaster Guards: Provide 26 gage steel plaster guards or mortar boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

#### 2.4 DOORS:

- A. Interior Doors: SDI-100, Grade II, heavy-duty, Model 2, minimum 18 gauge faces.
- B. Exterior Doors: SDI-100, Grade III, extra-heavy-duty, Model 2, minimum 16 gauge faces, galvanized.
- C. Fabricate exposed faces of doors and panels, including stiles and rails of non-flush units, only cold-rolled steel.
- D. "A" Label fire doors shall have minimum 16 gauge face plates.
  1. Door faces shall receive paint except as listed below.
- E. Thermal-Rated (Insulating) Assemblies:
  1. At exterior locations and elsewhere as shown or scheduled, provide doors which have been fabricated as thermal insulating door and frame assemblies and tested in accordance with ASTM C 236.

Unless otherwise indicated, provide thermal-rated assemblies with U-factor of 0.24 BTU/(hr\*ft sq\*deg F) or better.

- F. Door Hardware Reinforcement: Shall be a minimum of 12 gauge for hinges and be continuous channel for the full height of door, 12 gauge for closers and be a continuous channel for the full length of the header and 14 gauge for strikes and be a continuous channel for the full height of the door. 7 gauge reinforcements shall be used for hinges on frames. 26 gauge steel plaster guards or mortar boxes welded to the frame shall be provided at hardware cutouts where installed in concrete, masonry or plaster openings.
  - G. Door Louvers: Provide sightproof stationary louvers for interior doors where indicated, constructed of inverted V-shaped or Y-shaped blades formed of 24 gauge cold-rolled steel set into 20-gauge steel frame.
- 2.5 FIRE DOORS AND RELATED FRAMES: When required for either insurance rating purposes or for compliance to building codes (see Drawings), the fire door and frame assembly shall be of a type investigated and successfully fire tested in accordance with the ASTM designation E-152-41 or later revision. The assembly shall be identified by labels (or an identification marking) of the approving agency. The label on the door shall indicate the applicable fire test rating for the door construction furnished. Approved agencies shall include the Underwriters' Laboratories, Inc., the Underwriters' Laboratories of Canada, The Factory Mutual Laboratories, and other authorities having local or regional jurisdiction.
- 2.6 STOPS AND MOLDINGS: Provide stops and moldings around glazed panels in doors and frames where indicated.
- A. Form fixed stops and moldings integral with frame, unless otherwise acceptable to Architect. Provide fixed stops on inside of hollow metal units exposed to exterior and on corridor side of interior units, unless otherwise indicated.
  - B. Provide removable stops and molds at other locations, formed of not less than 20 gauge steel sheets; exterior, galvanized and interior cold-rolled. Secure with machine screws spaced uniformly not more than 12" o.c. Form corners with butted hair-line joints. Coordinate width of rabbet between fixed and removable stops with type of glass or panel and type of installation indicated.
- 3.0 EXECUTION:
- 3.1 GENERAL: Install hollow metal units and accessories in accordance with the final shop drawings and manufacturer's data and as herein specified.
- 3.2 SETTING MASONRY ANCHORAGE DEVICES: Provide masonry anchorage devices where required for securing hollow metal frames to in-place concrete or masonry construction. Set anchorage devices opposite each anchor location, in accordance with details on final shop drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.
- 3.3 PLACING FRAMES: Set frames accurately in position, plumbed, aligned and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged. Comply with provisions of SDI-105 "Recommended Erection Instructions for Steel Frames" unless otherwise indicated.
- A. In masonry construction, building-in of anchors and grouting of frames shall be performed as wall is laid up. Mortar may be used to grout frames only.
  - B. Place fire-rated frames in accordance with NFPA Standard No. 80.

- 3.4 DOOR INSTALLATION: Fit hollow metal doors, except fire-rated doors, accurately in their respective frames, with clearances specified in SDI-100. Place fire-rated doors with clearances as specified NFPA Standard No. 80. Doors shall be installed plumb and in true alignment in a prepared opening and be fastened to achieve the maximum operational effectiveness and appearance of the unit.
- 3.5 HARDWARE: Hardware shall be field applied.
- 3.6 ADJUST AND CLEAN:
- A. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
  - B. Protection Removal: Immediately prior to final inspection, remove protective plastic wrappings from prefinished doors.
- 3.7 FINAL ADJUSTMENTS: Check and readjust all operating finish hardware items in hollow metal work just prior to final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including doors or frames which are warped, bowed or otherwise damaged.

END OF SECTION 08 11 00

Insulated Simple-Test™ Doors  
Type FDI-2S Chain Operated Fire Door, Front of Hood Mount  
ColorCote Finish - Face of Wall Mounted - Thermal Fusible Link Activated

1.0 GENERAL

1.1 Summary

- A. All Rolling Fire Doors shall be as manufactured by The Cookson Company, Phoenix, Arizona. Furnished materials shall include all curtains, bottom bars, guides, brackets, hoods, operating mechanisms and any special features.
- B. Work not to be included by The Cookson Company includes design of, material for and preparation of door openings but not limited to structural or miscellaneous iron work, access panels, and finish painting.

1.2 Quality Assurance

- A. All rolling fire doors shall be constructed in accordance with an approved testing agencies requirements and shall bear a 1-1/2 hour rating label. Firelocks shall be installed on doors over 13'7" wide to positively hold the curtain in the guides.

1.3 Inspection:

- A. Installer must examine substrates and conditions under which door units and operator are to be installed and notify Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner. Commencing with the installation of doors shall indicate acceptance of preparatory work.

1.4 Submittals:

- A. Manufacturer's Data: For information only, submit two copies of manufacturer's specifications, roughing-in diagrams, certified performance reports, installation instructions, parts lists, maintenance instructions and general published recommendations for each component of the door operating systems required; include data substantiating that the system will perform as specified. Indicate by copy of transmittal form that Installer has received copy of data required for installation. Furnish templates, diagrams, and other data to fabricators and installers of related work, as needed for coordination of operators with doors, frames, hardware, concrete work, electrical work and other work.
- B. Shop Drawings: Submit shop drawings for fabrication and installation of door units and associated components of the work. Show anchors, hardware, operators and other components.

1.5 Warranty

- A. All Cookson Rolling Fire Doors shall be warranted for a period of 2 years from the time of shipment against defects in workmanship and materials.

2.0 PRODUCTS

2.1 Materials

- A. Basis-of-Design: The door curtain shall be constructed of interconnected strip steel slats conforming to ASTM A-653. The slats shall be designated by The Cookson Company as No. 45 (measuring 3" high by 7/8" deep) consisting of a 22 gauge exterior slat and a 22 gauge interior slat separated by 13/16" of mineral wool fire resistant insulation with a R value of 5.3, flame spread index of 10 and a STC rating of 27.
- B. The finish on the door curtain shall be Cookson ColorCote consisting of the following:
  - 1. Grade 40 steel, ASTM A-653 galvanized steel zinc coating
  - 2. Bonderized coating for prime coat adhesion

3. Factory applied Thermosetting Powder Coating applied with a minimum thickness of 2 mils. The color shall be selected by the architect and shall be chosen from standard color chart.
  - C. The bottom bar shall consist of two 1/8" steel angles mechanically joined together with a 1" diameter Pyroglass astragal continuous along the bottom. The finish on the bottom bar shall be the same Cookson ColorCote finish as indicated in the curtain section.
  - D. The guides shall consist of 3 steel angles bolted together with 3/8" fasteners to form a channel for the curtain to travel. Fire rated brush weatherstripping shall be furnished continuously along the exterior leg of each guide. The wall angle portion shall be continuous and fastened to the surrounding structure with either minimum 1/2" fasteners or welds, both on 36" centers. The finish on the guide angles shall be the same Cookson ColorCote finish as indicated in the curtain section.
  - E. The brackets shall be constructed of steel not less than 1/4" thick and shall be bolted to the wall angle with minimum 1/2" fasteners. The finish on the brackets shall be the same Cookson ColorCote finish as indicated in the curtain section.
  - F. The barrel shall be steel tubing of not less than 4" in diameter. Oil tempered torsion springs shall be capable of correctly counter balancing the weight of the curtain and shall have both a main and an auxiliary spring. The barrel shall be designed to limit the maximum deflection to .03" per foot of opening width. The springs shall be adjusted by means of an exterior wheel. The barrel shall be unpainted.
  - G. The hood shall be fabricated from 24 gauge galvanized steel and shall be formed to fit the curvature of the brackets. The finish on the hood shall be the Cookson FinalCote finish as indicated in the curtain section.
- 2.2 Operation
- A. The Simple-Test Chain Operated Fire Door shall have a combination chain / controlled closing system operator including endless steel chain, chain keeper, and geared reduction unit. Integral to the unit is a locking mechanism to hold the door at any position during normal door operation mode and a governor to control automatic closing speed.
    1. Automatic closure shall be activated by fusible link.
    2. Door shall maintain a closing speed of not less than 6" (152 mm) nor more than 12" (305 mm) per second during normal and automatic closure.
    3. Resetting of spring tension or mechanical dropouts shall not be required. Door shall be reset by replacing and reconnecting the fusible link.
  - B. Chain operated doors shall open and close with a maximum of 25 pounds of effort utilizing an endless chain.
- 2.3 Locking Mechanisms
- A. The chain operated door shall be secured by means of a chain lock.

### 3.0 EXECUTION

- 3.1 Authorized Installer:
- A. All rolling counter doors shall be installed by a manufacturer's authorized distributor.
- 3.2 Installation
- A. All Cookson Rolling Fire Doors shall be installed in accordance with NFPA Bulletin 80 by an authorized Cookson Distributor.
  - B. Set and secure counter door frames, and operating equipment complete with necessary hardware, anchors and equipment supports in prepared openings in strict accordance with the manufacturer's approved shop drawings and installation instructions.

- C. Set Units plumb, level and true to line, without warp or rack of frames. Anchor securely in place. Separate aluminum from sources of corrosion or electrolytic action at points of contact with other materials.
- 3.3 Test, Adjust, Lubricate:
- A. Upon completion of installation, lubricate, test and adjust doors to operate easily, free from warp, twist or distortion and fitting weather tight for the entire perimeter.
- 3.4 Clean and Protect:
- A. Clean surfaces promptly after installation of door, exercising care to avoid damage of the protective coating, if any. Remove excess sealant compounds, dirt and other substances.
  - B. Protection: Contractor shall exercise protective treatment and other precautions through the remainder of the construction period, to insure that door will be without damage or deterioration.

END OF SECTION





1.0 GENERAL

1.1 SCOPE:

- A. Furnish complete finish hardware except as mentioned hereinafter as being provided by others.
- B. Provide Door Hardware as indicated in the **DOOR HARDWARE SCHEDULE** located at the end of this section.
- C. The contractor is responsible for reviewing all opening scheduled for replacement door hardware and notifying the architect prior to bid of any discrepancies with the herein schedule. Of particular importance are those doors containing electronic hardware that conflict with this schedule.
- D. Any modifications required to the existing doors or frames are to be included in the contractor's bid. All frames are to look new in appearance when the work is complete.

1.2 DETAILS

- A. Coordinate hardware for related trades such as metal doors, frames, etc.
- B. Immediately after receipt of the finish hardware purchase order, coordinate reviewed shop drawings from any affected trades.
- C. Hardware shall be delivered to the job site in the manufacturer's original packages. Each item shall be clearly marked with the opening number to identify proper locations.
- D. Contractor to provide a suitable storage space for hardware upon delivery to the job site. Store and handle to prevent damage or loss.

1.3 QUALIFICATIONS:

- A. As a mandatory requirement, all hardware shall be furnished by an established hardware firm who maintains and operates an office, display and stock. The firm shall be a regular authorized distributor of the locks, and related hardware that it proposes to furnish.
- B. All hardware for this project shall be scheduled and furnished by or under the direct supervision of a regular member of the American Society of Architectural Hardware Consultants who is also a full time of the firm. Factory representatives or other persons working with but not for, as a regular employee of the Hardware Supplier will not be considered all schedules submitted to the architect for approved and job use shall carry the signature of the consultant. The Hardware Consultant shall make periodical visits to the jobsite while Hardware is being installed & on completion of project he shall inspect the hardware for correct operation and installation of same and notify the architect in writing that this inspection has been made.

1.4 SUBMITTALS:

- A. Prepare and submit the complete detailed hardware schedule in accordance with Section - "Shop Drawings, Project Data & Samples".
- B. Schedule and detail each door separately. On doors of different sizes or where hardware such as hinges, closers and locks is different a separate heading shall be used. No "A" label openings shall be combined with other label classifications.
- C. If requested, supply a sample of each hardware item as required, to be retained by architect for comparison with hardware furnished. Any deviation from hardware scheduled shall be replaced with the proper hardware. Samples will be returned in time for installation on the project. Tag for opening identification.
- D. Templates or template information shall be sent to each manufacturer who requires such information. (Example: Custom hollow metal door and frame manufacturers, etc.) An approved hardware schedule shall be sent to each manufacturer who required template information.

1.5 PRODUCT HANDLING:

- A. Hardware shall be ordered so that it will be available on time for job requirements.
- B. Locked storage space complete with shelving, for unpacking crates and sorting out hardware shall be furnished.
- C. If doors are field painted or finished, hardware shall be protected.

2.0 PRODUCTS:

2.1 MATERIALS:

- A. Items listed herein are taken from the following manufacturer's catalogs:
- B. Any substitutions of hardware manufacturer's other than those listed in this specification must be approved in writing by the architect ten (10) days prior to bid date. Samples must be submitted upon request of the Architect.
- C. Finishes of items of hardware shall be as selected by the Owner.
- D. Ball Bearing Hinges - shall be Hager Stanley or McKinney
- E. Locksets and Latchsets shall be Corbin, Russwin, Mortise Locksets with lever handles. No substitutes.
- F. Exit Devices shall be Corbin Russwin as scheduled; Von Duprin is approved equal.
- G. Door Closers shall be Corbin Russwin; LCN is approved equal.

- J. Mop, Kick and Armor Plates - Plate numbers Trimco 8 X 34 .050 US43D. Equal plates as manufactured by Rockwood, Hager and Baldwin, respectively, will be accepted.
  - K. Door Pulls - Pull numbers 1013-3 1001-11 8 X 16 finish as selected by the Owner as manufactured by Trimco. Equal push and pulls as manufactured by Rockwood, Hager and Baldwin will be accepted.
  - L. Door stops shall be Trimco W1270 and 1210 Series as required. Equal stops by Rockwood, Hager, Baldwin and H.B. Ives will be accepted.
  - M. Silencers shall be GJ64. Provide 3 silencers for single doors and two (2) silencers for pairs of doors.
  - N. Thresholds shall be Pemko, Reese or National Guard Products.
  - O. Fasteners. All items of hardware shall be supplied with correct fasteners such as wood
  - P. Keys, Keying
    - 1. All locksets shall be furnished with two (2) cut keys with key code number stamped on bow of key. All cylinders shall be master keyed to existing keyed master systems. Furnish four (4) master keys for each master keyed group. This system is Best.
    - 2. Consult with the Architect & Owner & secure written approval of the complete keying layout prior to placing lock order with factory.
    - 3. The master keys shall be sent direct to the Owner's Representative by registered mail, return receipt requested.
  - Q. Codes: The hardware supplier shall be responsible for supplying the correct hardware to meet all local and state building fire and handicapped codes.
- 3.0 EXECUTION:
- 3.1 HARDWARE LOCATION:
- A. A schedule of mounting heights for all items of hardware shall be included in hardware schedule for review.
  - B. Degree of opening for doors with overhead holder, closers, etc., shall be included in hardware schedule for Architect's review.
- 3.2 INSTALLATION:
- A. All hardware shall be installed by carpenter mechanics, skilled in the application of institutional grade hardware.
  - B. After installation, representative templates, instruction sheets, and installation detail, shall be placed in a file folder to be turned over to Owner when building is accepted. Include at least two (2) each of special adjusting tools furnished with hardware.

- C. After the building is occupied, arrange an appointment with the Owner's designated representative to instruct this person in the proper use, servicing, adjusting & maintenance of hardware.
- D. Special Emphasis will be placed on the care of and the installation on the Finished Hardware:
  - 1. Install hinges on doors for which they are scheduled and marked.
  - 2. Install locks on doors for which they are scheduled and marked.
  - 3. Do not remove labels on locks or cylinders this label has valuable keying references.
  - 4. If door stop scheduled for an opening is not appropriate due to furniture
  - 5. Closers are to be provided with Sex Nuts and Bolts.
  - 6. All lock strikes are to be 4 7/8" unless so noted.

3.2 **DOOR HARDWARE SCHEDULE:** See Attached.

END OF SECTION 087100

## Hardware Sets

### 247212 : Williams Brice roof repair

#### SET #01

Doors: 101

3 Hinges	5BB1HW 4 1/2 x 4 1/2 NRP	630	IV
1 Fire Exit Device	99NL-F x 990NL-R&V 425-SNB (QTY-2) 48"	US26D	VO
1 Rim Cylinder	12E-72 STD RP S2	626	BE
1 Closer	4040 XP SCUSH TBWMS	AL	LC
1 Weatherstrip	315 CR 1 x 48" 2 x 86"		PE
1 Door Sweep	315 CN 48"		PE
1 Threshold	171 A 48"		PE

#### SET #02

Doors: 102

3 Hinges	5BB1HW 4 1/2 x 4 1/2 NRP	630	IV
1 Fire Exit Device	99NL-F x 990NL-R&V 425-SNB (QTY-2)	US26D	VO
1 Rim Cylinder	12E-72 STD RP S2	626	BE
1 Closer	4040 XP SCUSH TBWMS	AL	LC
1 Weatherstrip	315 CR 1 x 36" 2 x 86"		PE
1 Door Bottom	315 CN 36"		PE
1 Threshold	171 A 36"		PE

#### SET #03

Doors: 104, 105

3 Hinges	5BB1HW 4 1/2 x 4 1/2	630	IV
1 Lockset	L9080L 03A	626	SC
1 Mortise Cylinder	1E-74 STD	626	BE
1 Closer	4040 XP SCUSH TBWMS	AL	LC

#### SET #04

Doors: 106

3 Hinges	5BB1HW 4 1/2 x 4 1/2	630	IV
1 Fire Exit Device	99NL-F x 990NL-R&V 425-SNB (QTY-2)	US26D	VO
1 Rim Cylinder	12E-72 STD RP S2	626	BE
1 Closer	4040 XP SCUSH TBWMS	AL	LC



1.0 GENERAL:

1.1 SCOPE: This section of the specifications and related drawings describe requirements pertaining to miscellaneous specialty items.

1.2 MANUFACTURERS: In order to define minimum, acceptable requirements for quality, function, sizes, gauges, grades, color, etc. for manufactured products, the specifications for materials designate brand names of products that conform to those requirements and that are acceptable. Equivalent products of other manufacturers may be proposed for consideration under conditions set forth in section entitled "Instructions to Bidders", paragraph entitled "or equal clause".

1.3 SUBMITTALS:

A. Manufacturer's Data: For information only, submit two copies of manufacturer's specifications and installation instructions for each item under this section. Indicate by transmittal form that copy of instructions and recommendations have been distributed to the installer.

2.0 PRODUCTS

2.1 FIRE EXTINGUISHERS: Furnish and install multipurpose fire extinguishers Model MP-10 as manufactured by Larsen's Manufacturing Company, JL Industries, or approved equal. Extinguishers shall be completely charged and furnished with 2409-RM. Provide wall bracket No. 846 at all locations. All extinguishers and accessories are to be provided in accordance to the Authorities Having Jurisdiction.

TOP OF CABINET TO BE 4'- 8" A.F.F. Supply extinguishers per the following schedule:

Cabinets, brackets and extinguishers shall be as follows:

<b>Location</b>	<b>Mounting Brackets/Cabinet</b>	<b>Mounting Brackets/Cabinet</b>
Custodial Rooms	Wall mounted with bracket number B-2.	Type MP-10 (A multipurpose extinguisher fully charged with 10 lbs. of dry chemical for A, B, C class fires).
Mechanical Rooms, Electrical Rooms,	Wall mounted with bracket number B-2.	Type DC-10 (An extinguisher fully charged with 10 lbs of dry chemical for A, B, C class fires).

3.0 EXECUTION

3.1 INSTALLATION: Product specified in this section shall be installed in accordance with details shown on the drawings and with manufacturer's recommendations and shop drawings, as applicable.

3.2 All extinguishers must have dated tag and be certified.

END OF SECTION 10 91 00





PART 1 - GENERAL

1.1 SCOPE:

- A. Bids of work covered by each section of these specifications shall be based on the layout and equipment as shown and specified with only such approved substitutions as are allowed. Drawings show general arrangement of piping. Because of small scale of drawings, it is not possible to indicate all offsets, fittings, and accessories, which may be required. Contractor shall carefully investigate structural and finish conditions affecting his work and shall arrange such work accordingly, furnishing such fittings, traps, valves, and accessories as may be required to meet such conditions. Where locations make it necessary or desirable from Contractor's standpoint to make changes in arrangements or details shown on drawings, he may present suggestions for such changes and obtain Engineer's approval prior to making such changes.

1.2 CODES:

- A. All work under this division shall be in strict compliance with "International Codes" and all applicable Codes and Regulations of the City of Columbia, South Carolina.

1.3 ASBESTOS:

- A. At any time the Contractor encounters asbestos, he shall immediately stop work in the immediate area and suspend any further work until asbestos is removed. Contractor shall, upon discovery of asbestos, notify owner, or owner's representative, who shall be responsible for the removal of the asbestos, all in accordance with NESHAP (National Emission Standard for Hazardous Air Pollutants). Any form of asbestos removal or demolition shall be by owner. Engineer is not an "Owner or Operator" as defined under NESHAP.
- B. Contractor is responsible for, and shall be aware of all state and federal laws pertaining to asbestos as well as NESHAP requirements.

1.4 LEAD FREE:

- A. All solder, flux and pipe used in water system must be lead free. Lead free is defined as less than 0.2 percent lead in solder and flux and less than 8.0 percent lead in pipes and fittings.

1.5 AMERICANS WITH DISABILITIES ACT:

- A. All items or work under this division of the specifications shall comply with guidelines as set forth in the Americans with Disabilities Act.

1.6 PERMITS AND FEES:

- A. Obtain permits, licenses, pay fees, etc. as required for performance of Contract. Arrange for necessary inspections required by governing authority and deliver certificates of approval to Architects or their representatives. File plans required by governing body.

1.7 DEFINITIONS:

- A. In this division of the specifications and accompanying drawings, the following definitions apply:

- B. Provide: To purchase, pay for, transport to the job site, unpack, install, and connect complete and ready for operation; to include all permits, inspections, equipment, material, labor, hardware, and operations required for completion and operation.
- C. Install (Installed): To furnish and install complete and ready for operation.
- D. Furnish: To purchase, pay for, and deliver to the job site for installation by others.
- E. The Plumbing Contractor is cautioned that "furnish" requires coordination with others. Such coordination costs shall be included as part of Plumbing Contractor's bid.

1.8 CUTTING AND PATCHING:

- A. Cutting of walls, floors, roofs, partitions, and ceiling, required for proper installation of the systems shall be performed under this contract.
- B. Cutting shall be done in a neat, workmanlike manner. No joist, beams, girders, columns, or other structural members may be cut without written permission from the Engineer. When possible, holes shall be saw-cut or core drilled neat to minimize patching.
- C. Re-routing of existing pipes, insulation, etc. as required for installation of new system is included in this work. All work shall be done in accordance with specifications for new work of the particular type involved.
- D. Patching shall be performed to match existing structures, exterior walls and roofs, and shall form watertight installation.

1.9 VERIFICATION OF DIMENSIONS, ETC.:

- A. The Contractor shall visit the premises and thoroughly familiarize himself with all details of the work, working conditions, verify all dimensions in the field, advise the Engineer of any discrepancy, and submit shop drawings of any changes he proposes to make in quadruplicate for approval before starting the work. Contractor shall install all equipment in a manner to avoid building interference.

1.10 COORDINATION WITH OTHER TRADES:

- A. Coordinate all work of each section with work of other sections to avoid interference. Bidders are cautioned to check their equipment against space available as indicated on drawings, and shall make sure that proposed equipment can be accommodated. Before beginning work under each section, inspect installed work of other trades and verify that such work is complete to the point where the installation may properly begin.

1.11 PROTECTION OF ADJACENT WORK:

- A. Protect work and adjacent work at all times with suitable covering. All damage to work in place caused by Contractor shall be repaired and restored to original good and acceptable condition using same quality and kinds of materials as required matching and finishing with adjacent work.

1.12 EXISTING EQUIPMENT AND MATERIALS:

- A. All items of equipment removed under this section of the specifications shall become the property of this Contractor shall be promptly removed from this site.

1.13 CLEAN-UP:

- A. At the completion of the contract work, all areas where work has been performed shall be left clean. All trash shall be removed from the site by the Contractor.

1.14 WARRANTY:

- A. The Contractor for each section of the work under this division will furnish to the Owner a written warranty for the installation as installed, including controls and all other equipment covered under each section of the specifications, to perform in a quiet, efficient, and satisfactory manner with no more than normal service.
- B. Each warranty shall extend for a period of one year following substantial completion and acceptance of construction. They shall be endorsed by the Contractor. Refrigeration compressors shall have a five (5) year warranty.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 22 00 10



PART 1 – GENERAL

1.1 SCOPE:

- A. Bids of work covered by each section of these specifications shall be based on the layout and equipment as shown and specified with only such approved substitutions as are allowed. Drawings show general arrangement of ductwork and piping. Because of small scale of drawings, it is not possible to indicate all offsets, fittings, and accessories, which may be required. Contractor shall carefully investigate structural and finish conditions affecting his work and shall arrange such work accordingly, furnishing such fittings, traps, valves, and accessories as may be required to meet such conditions. Where locations make it necessary or desirable from Contractor's standpoint to make changes in arrangements or details shown on drawings, he may present suggestions for such changes and obtain Engineer's approval prior to making such changes.

1.2 CODES:

- A. All work under this division shall be in strict compliance with "International Codes" and all applicable Codes and Regulations of the City of Columbia, South Carolina.

1.3 MATERIAL AND SHOP DRAWINGS:

- A. Use only new materials and the standard product of a single manufacturer for each article of its type unless specifically mentioned otherwise. Materials and workmanship in the case of assembled items shall conform to the latest applicable requirements of NFPA, ASME, NEC, ASTM, AWWA, NEMA, and ANSI.
- B. Schedule submittals to expedite work. Unless otherwise indicated in this Section, submittals shall be submitted within 30 days of date of Notice to Proceed. Provide electronic copies of submittals in PDF format for review and approval. All submittals shall be bound in a single volume. Partial lists will not be considered and will be returned to the Contractor. Controls may be submitted separately and shall be submitted no later than 60 days of notice to proceed. Identify Project, Contractor, subcontractor, supplier, manufacturer, pertinent drawing sheet and detail numbers, and associated specification section numbers. A table of contents shall be included in the front of the submittal with tabs indicating each section. Identify variations from requirements of Contract Documents.
- C. Contractor responsibilities:
  - 1. Review submittals prior to transmittal. Verify compatibility with field conditions and dimensions, product selections and designations, quantities, and conformance of submittal with requirements of Contract Documents. Return non-conforming submittals to preparer for revision rather than submitting to Engineer. Coordinate submittals to avoid conflicts between various items of work. Failure of Contractor to review submittals prior to transmittal to Engineer shall be cause for rejection. Incomplete, improperly packaged, and submittals from sources other than Contractor will not be accepted. Submittals not stamped APPROVED and signed by the Contractor will be returned to the Contractor.
  - 2. Where required by specifications or otherwise needed, prepare drawings illustrating portion of work for use in fabricating, interfacing with other work, and installing products. Prepare ¼" per foot scale drawings of all mechanical rooms when substituting items of equipment that are not the basis for design.

All equipment submitted shall be of adequate size and physical arrangement to allow unobstructed access when installed, for routine maintenance, coil removal, shaft removal, motor removal and other similar operations. Contract Drawings shall not be reproduced and submitted as shop drawings. Drawings shall be 8-1/2 by 11 inches minimum and 24 by 36 inches maximum. Title each drawing with Project name and reference the sheet the drawing corresponds to.

3. Provide product data such as manufacturer's brochures, catalog pages, illustrations, diagrams, tables, performance charts, and other material which describe appearance, size, attributes, code and standard compliance, ratings, and other product characteristics. Provide all critical information such as reference standards, performance characteristics, capacities, power requirements, wiring and piping diagrams, controls, component parts, finishes, dimensions, and required clearances. Submit only data which are pertinent. Mark each copy of manufacturer's standard printed data to identify products, models, options, and other data pertinent to project.
4. Control diagrams: Show relative positions of each component as a system diagram. Provide points list, wiring diagram and schedule of all products and components used in system.
5. Engineer will review and return submittals with comments. Do not fabricate products or begin work which requires submittals until return of submittal with Engineer acceptance. Promptly report any inability to comply with provisions. Revise and resubmit submittals as required within 15 days of return from Engineer. Make re-submittals under procedures specified for initial submittals. Identify all changes made since previous submittal.

D. Engineer Review:

1. Engineer will review submittals for sole purpose of verifying general conformance with design concept and general compliance with Contract Documents. Approval of submittal by Engineer does not relieve Contractor of responsibility for correcting errors which may exist in submittal or from meeting requirements of Contract Documents. After review, Engineer will return submittals marked as follows to indicate action taken:
2. No Exception: Part of work covered by submittal may proceed provided it complies with requirements of Contract Documents. Final acceptance will depend upon that compliance. The term "approved" shall only indicate that there is no exception taken to the submittal.
3. No Exception As Corrected: Part of work covered by submittal may proceed provided it complies with notations and corrections on submittal and requirements of Contract documents. Final acceptance will depend upon that compliance.
4. Revise And Resubmit: Do not proceed with part of work covered by submittal including purchasing, fabricating, and delivering. Revise or prepare new submittal in accordance with notations and resubmit.

E. Samples:

1. Submit samples to illustrate functional and aesthetic characteristics of products with all integral parts and attachment devices. Include full range of

manufacturer's standard finishes, indicating colors, textures, and patterns for A/E selection. Submit the number of samples specified in individual specification sections. One sample will be retained by A/E.

F. Items Requiring Submittal are as Follows:

1. Test and Balance
2. Insulation
3. All items listed in MANUFACTURERS: Section of 230010

1.4 ASBESTOS:

- A. At any time the Contractor encounters asbestos, he shall immediately stop work in the immediate area and suspend any further work until asbestos is removed. Contractor shall, upon discovery of asbestos, notify owner, or owner's representative, who shall be responsible for the removal of the asbestos, all in accordance with NESHAP (National Emission Standard for Hazardous Air Pollutants). Any form of asbestos removal or demolition shall be by owner. Engineer is not an "Owner or Operator" as defined under NESHAP.
- B. Contractor is responsible for, and shall be aware of all state and federal laws pertaining to asbestos as well as NESHAP requirements.

1.5 LEAD FREE:

- A. All solder, flux and pipe used in water system must be lead free. Lead free is defined as less than 0.2 percent lead in solder and flux and less than 8.0 percent lead in pipes and fittings.

1.6 AMERICANS WITH DISABILITIES ACT:

- A. All items or work under this division of the specifications shall comply with guidelines as set forth in the Americans With Disabilities Act.

1.7 PERMITS AND FEES:

- A. Obtain permits, licenses, pay fees, etc. as required for performance of Contract. Arrange for necessary inspections required by governing authority and deliver certificates of approval to Architects or their representatives. File plans required by governing body.

1.8 DEFINITIONS:

- A. In this division of the specifications and accompanying drawings, the following definitions apply:
- B. Provide: To purchase, pay for, transport to the job site, unpack, install, and connect complete and ready for operation; to include all permits, inspections, equipment, material, labor, hardware, and operations required for completion and operation.
- C. Install (Installed): To furnish and install complete and ready for operation.
- D. Furnish: To purchase, pay for, and deliver to the job site for installation by others.



- E. The Mechanical Contractor is cautioned that "furnish" requires coordination with others. Such coordination costs shall be included as part of Mechanical Contractor's bid.

1.9 CUTTING AND PATCHING:

- A. Cutting of walls, floors, roofs, partitions, and ceiling, required for proper installation of the systems shall be performed under this contract.
- B. Cutting shall be done in a neat, workmanlike manner. No joist, beams, girders, columns, or other structural members may be cut without written permission from the Engineer. When possible, holes shall be saw-cut or core drilled neat to minimize patching.
- C. Re-routing of existing pipes, insulation, etc. as required for installation of new system is included in this work. All work shall be done in accordance with specifications for new work of the particular type involved.
- D. Patching shall be performed to match existing structures, exterior walls and roofs, and shall form watertight installation. Where existing ductwork, pipe or other items are removed, the walls, floors, roofs, partitions or ceilings shall be patched to match existing finishes by this contractor.

1.10 VERIFICATION OF DIMENSIONS, ETC.:

- A. The Contractor shall visit the premises and thoroughly familiarize himself with all details of the work, working conditions, verify all dimensions in the field, advise the Engineer of any discrepancy, and submit shop drawings of any changes he proposes to make in quadruplicate for approval before starting the work. Contractor shall install all equipment in a manner to avoid building interference.

1.11 COORDINATION WITH OTHER TRADES:

- A. Coordinate all work of each section with work of other sections to avoid interference. Bidders are cautioned to check their equipment against space available as indicated on drawings, and shall make sure that proposed equipment can be accommodated. Before beginning work under each section, inspect installed work of other trades and verify that such work is complete to the point where the installation may properly begin.
- B. Where equipment supplied by an approved manufacturer is substituted for the specified equipment, the Contractor will be responsible for coordinating any changes required in his work or other trades work, including but not limited to electrical requirements, structural steel requirements and space requirements. Any additional costs required to make changes to other trades work shall be borne by this contractor.

1.12 PROTECTION OF ADJACENT WORK:

- A. Protect work and adjacent work at all times with suitable covering. All damage to work in place caused by Contractor shall be repaired and restored to original good and acceptable condition using same quality and kinds of materials as required to match and finish with adjacent work.

1.13 EXISTING EQUIPMENT AND MATERIALS:

- A. All items of equipment removed under this section of the specifications shall become the property of this Contractor shall be promptly removed from this site.

1.14 FIRESTOPPING:

- A. Provide firestopping for all mechanical penetrations through fire resistant walls and shaft enclosures, and floor, ceiling, and roof elements of fire resistant assemblies. Firestopping shall provide rating comparable to rating of structure it protects.
- B. Firestopping materials currently classified with UL as "Through Penetration Firestop Systems".
- C. Firestopping materials shall have been tested in accordance with UL 1479 "Fire Tests of Through Penetration Firestops".

1.15 CLEAN-UP:

- A. At the completion of the contract work, all areas where work has been performed shall be left clean. All trash shall be removed from the site by the Contractor.

1.16 APPROVALS AND SUBSTITUTIONS:

- A. Notwithstanding any reference in the specifications to any article, device, product, material, fixture, form, or type of construction by name, make or catalog number, such references shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition; and the Contractor, in such cases, may at his option use any article, device, product, material, fixture, or type of construction which, in the judgment of the Engineer, expressed in writing, is equal to that specified.
- B. Requests for written approval to substitute materials or equipment considered by the Contractor as equal to those specified, shall be submitted for approval to the Engineer ten (10) days prior to bid date. Requests shall be accompanied by samples, descriptive literature and engineering information as necessary to fully identify and evaluate the product. No increase in the contract sum will be considered when requests are not approved.
- C. The Contractor shall bear the burden and cost of coordinating with all trades any changes in work required by substitutions, including but not limited to electrical connections, additional components required, service clearance, etc.

1.17 AS-BUILT DRAWINGS:

- A. The Contractor shall keep a record set of drawings on the job; and as construction progresses shall show the actual installed location of all items, material, and equipment on these job drawings. Indicate approved changes in red ink.
- B. At the time of final completion, a corrected set of As-Built drawings shall be delivered to the Engineer. A final set of reproducible drawings with job information that reflects the actual installation shall be prepared by the Engineer and given to the Owner.

1.18 WARRANTY:

- A. The Contractor for each section of the work under this division will furnish to the Owner a written warranty for the installation as installed, including controls and all

other equipment covered under each section of the specifications, to perform in a quiet, efficient, and satisfactory manner with no more than normal service.

- B. Each warranty shall extend for a period of one year following substantial completion and acceptance of construction. They shall be endorsed by the Contractor. Refrigeration compressors shall have a five (5) year warranty.

#### 1.19 MANUFACTURERS:

- A. In order to define requirements for quality and function of manufactured products, and requirements such as size, gauges, grade selection, color selections and like specifications requirements, the specifications as written hereinafter are based upon products of those manufacturers who are named hereinafter under various specifications for materials.
- B. In addition to products of manufacturers named hereinafter in the specifications, equivalent products of the following named manufacturers will be acceptable under the base bid:
  - 1. Split System Heat Pump Units:
    - a) Carrier Air Conditioning Company, The Trane Company, Daikin
  - 2. Air Distribution:
    - a) Metal Industries, Price Company, Titus Manufacturing Company, Nailor Industries, Anemostat Products Division, Krueger, J & J Register Co., Carnes Company, Tuttle and Bailey, AirGuide Manufacturing
  - 3. Fire Dampers:
    - a) Ruskin Manufacturing Company, NCA Manufacturing, Safe Air/Dowco, Inc., Cesco Products, Inc., Leader Industries, Pottorff, Prefco Products, Nailor Industries
  - 4. Pipe Hangers:
    - a) Cooper B-Line, Fee and Mason Manufacturing Company, Anvil International, Erico Caddy, Tolco a Division of Nibco

#### PART 2 - PRODUCTS

##### 2.1 CONCRETE EQUIPMENT FOUNDATIONS:

- A. Use 3000-psi "batch plant" concrete or approved "precast" reinforced concrete foundations.

##### 2.2 NAME PLATES:

- A. All equipment provided under this division shall be labeled with a Bakelite nameplate 1" x 3" minimum with 3/8" minimum height lettering as manufactured by Seton Name Plate Company. See filter nameplate requirement below.

2.3 FILTERS:

- A. Provide one new set of MERV 8 pleated filters in each unit at final completion. Provide the Owner one replacement set of filters with a complete filter list indicating unit tag and size and quantity of filters needed. At each filter door provide a Bakelite nameplate 1" x 3" minimum with 1/8" minimum height lettering as manufactured by Seton Name Plate Company, that indicates the size and quantity of each filter required in that particular unit.

2.4 FIRESTOPPING MATERIALS:

- A. The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E 119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inches of water at the location of the test specimen for the time period equivalent to the fire resistance rating of the construction penetrated. Material shall be capable of curing in the presence of atmospheric moisture to produce durable and flexible seal, and will form airtight and watertight bonds with most common building materials in any combination including cement, masonry, steel, and aluminum.

2.5 SLEEVES AND OPENINGS:

- A. Provide UL certified fire stop sleeving system for all pipe penetrations through fire rated walls, floors, partitions, ceilings, floor-ceiling assemblies and roofs as tested under ASTM E814-02 "Standard Method of Fire Tests of Through Penetration Fire Stops".

2.6 SEISMIC RESTRAINTS:

- A. Seismic restraints shall be provided per International Building Code Chapter 16 for Category D Buildings (See Code Compliance on Drawing Cover Sheet) and the drawings.

PART 3 - EXECUTION

3.1 CONCRETE EQUIPMENT FOUNDATIONS:

- A. Consult ASHRAE: A Practical Guide to Seismic Restraint, Chapter 6 for specific reinforcement and anchoring details, with respect to pad size and seismic forces. Unless otherwise noted, set all floor mounted and "on-grade" mounted equipment on 6" high concrete foundation pads. Concrete foundations shall be reinforced with #4 bars - 12" o.c. both ways, or as directed by A Practical Guide to Seismic Restraint. Pads shall be approximately 6" larger than equipment base, and have 1" x 1" chamfer on all edges. Pads shall have carborundum brick rubbed finish. Surface finish shall be uniformly smooth. Concrete floor shall be rough and foundation doweled to floor per A Practical Guide to Seismic Restraint.

3.2 PIPE FITTINGS:

- A. General: Provide complete systems of piping and fittings for all services as indicated. All pipe, valves, and fittings shall comply with American National Standards Institute, Inc. Code and/or local codes and ordinances. All fittings shall be domestically produced from domestic forgings. Cut pipe accurately to measurements established at building or site, and work into place without springing or forcing, properly clearing all windows, doors, and other openings or obstructions.

- B. Excessive cutting or other weakening of building to facilitate piping installation will not be permitted. Piping shall line up flanges and fittings freely and shall have adequate unions and flanges so that all equipment can be disassembled for repairs. Test all piping prior to insulation or concealing.

3.3 PIPE:

- A. All piping material shall be as specified in other sections of this division.
- B. Fittings and Connections: All turns and connections shall be made with long radius fittings as scheduled hereinafter. No miter connections will be permitted in welded work.
- C. Pipe joints shall be made in accordance with the following applicable specifications:
- D. Make all solder joints with non-corrosive type flux 95 Percent tin and 5 percent antimony alloy solder.

3.4 SLEEVES:

- A. Provide all sleeves in floors, beams, wall, roof, etc. as required for installing work of this division unless otherwise specified hereinafter. Size sleeves for insulated pipe to accommodate both pipe and insulation. Construct vertical sleeves in connection with concealed piping of 22 gauge galvanized iron. Sleeves thru fire-rated assemblies shall be firestopped as specified herein and insulation shall not pass thru sleeve unless material complies with firestopping specified.

3.5 PIPE HANGERS, SUPPORTS AND INSERTS:

- A. Pipe hangers, supports and inserts shall comply with Table 305.4 of the 2006 International Mechanical Code and be provided as follows:
- B. All piping shall be supported by forged steel hangers or brackets suitably fastened to structural portion. Wall brackets shall be Fee & Mason Fig. No. 151. Provide lock nuts on all adjustable hanger assemblies.

PIPE SIZE - INCHES

	1/2 – 2	2-1/2 – 4	6 – Up	Wall Plate Hanger
Grinnel	104	260	171	139
Fee & Mason	199	239	170	302
Elcen	92	12	15	---

- C. Hanger or Support Spacing (unless specified different hereinafter):

1. Copper Pipe:

Nominal Pipe Size – Inches	Maximum Span - Feet
1-1/4" and under	6'
1-1/2" and above	10'

- D. Size hangers on insulated piping to permit insulation and saddles to pass full size through hanger.

E. Trapeze Hangers:

1. May be used for groups of pipes close together and parallel. Trapeze hangers may be constructed from structural channel or angle irons or from pre-formed channel shapes. All pipe lines must be held on specific centers by U bolts, clips or clamps.
2. When supported with uni-strut an insulation sleeve under the clamp equal to Armacell Armafix is required.

F. Special and Additional Supports:

1. Special supports will be required where hangers cannot be used. Horizontal pipes shall be secured to prevent vibration or excessive sway. Where required, provide additional hangers to secure required level, slope or drainage, and also to prevent sagging. Provide a hanger within one foot of each elbow. Provide all miscellaneous steel required for pipe supports, anchors, etc.

3.6 INSULATION SHIELDS:

- A. Provide all insulated piping with 10-inch long (16 gauge) protective galvanized sheet metal shields extending 120 degrees around bottom of insulated pipe.

3.7 ELECTRIC WORK:

- A. All motors, and motor starters shall be furnished for items installed under this division of the specifications. All starters shall be magnetic type. All electrically operated equipment shall have readily accessible nameplates summarizing electrical information (i.e., voltage, phase, horsepower, watts, or amperes). Starters shall be as manufactured by General Electric Company, Westinghouse Electric Company, Cutler-Hammer Inc., or Square D Company. A.C. magnetic starters shall be across-the-line type. Starters shall provide overload protection in each phase and shall otherwise conform to all applicable requirements of these specifications. All magnetic starters shall be combination type, Motor Circuit Protector (MCP) type having interrupting rating equal to or greater than the available short circuit current, with "HAND-OFF-AUTO" selector switch, auxiliary contact, and pilot light in cover. Provide laminated plastic nameplates with white center core for each starter.
- B. All control conduit and wires and control devices shall be furnished and installed under this division. All contactors shall be of the mechanically held type. All control wiring within starters shall be installed in a workmanlike manner and neatly laced. All control wiring shall be color coded.
- C. All work shall conform with the applicable requirements of the National Electrical Codes. All electrical power characteristics shall be as indicated. All devices, which make and/or break electrical circuits, shall be rated for at least 125 percent of the load.
- D. Relays, contactors, and control devices shall open all ungrounded conductors. All fuses shall be current limiting time delay type equal to Bussman "LPN", 250 volt or "LPS", 600 volt.
- E. Control voltage shall not exceed 120 volts. Control power shall be taken from line terminals of controllers. Where necessary, control transformers shall be provided and

shall conform to NEMA Standards, properly sized, and shall be properly fused. Where control voltage is 120 volts, control conductors shall be color-coded.

- F. Electrical power service and connections to all equipment in this division will be made under electrical division of the work.

### 3.8 ITEMS OF MECHANICAL EQUIPMENT:

- A. All items of mechanical equipment electrically operated shall be in complete accordance with paragraph in this division entitled "Electrical Work". Mechanical equipment, other than individually mounted motors, shall be factory pre-wired to a single-set of line terminals and to a single load terminal strip to match load terminals on equipment. Each step shall have properly sized contactor and overcurrent protection.
- B. Mechanical equipment electrical components shall all be bonded together and connected to electrical system ground.

### 3.9 CLEANING:

- A. All surfaces on metal, pipe, insulation covered surfaces, and other equipment furnished and installed under this division of the specifications shall be thoroughly cleaned of grease, scale, dirt and other foreign material.
- B. Upon complete installation of ducts, clean entire system of rubbish, plaster, dirt, etc., before installing any outlets. After installation of outlets and connections to fans are made, blow out entire system with all control devices wide open.

### 3.10 SYSTEM BALANCING:

- A. The HVAC Contractor is responsible for the entire Test & Balance process. The contractor shall employ an independent balancing firm specializing in total system air balancing as approved by the engineer and certified by the AABC or NEBB. The balancing firm shall be employed prior to installation of any ductwork. Provide all labor, engineering and test equipment required to test, adjust, and balance all air conditioning systems.
- B. The Contractor is responsible to have a functioning system prior to Testing and Balancing, to provide a joint and cooperative effort to coordinate the test and balance, and to solve any problems in balancing and controls in order to establish proper system performance before leaving the job. The Contractor is responsible for providing the Test and Balance Agency (TAB) with a complete set of project drawings, specifications, and submittals, and for providing and installing new sheave or sheaves, new belts, as required, if a change in fan speed is necessary which cannot be made by adjusting the sheave originally installed. When requested by the Engineer, the TAB Agency will review plans and specifications of the systems prior to installation and submit a report of any deficiencies, which could preclude proper adjusting, balancing and testing of the system. The TAB agency shall submit copies of deficiency reports along with a preliminary report to the Engineer for review prior to final submittal.
- C. Instruments used will be those that meet the instrument requirements for Agency Qualifications of the AABC as published in the NEBB "Procedural Standards for Testing Adjusting and Balancing of Environmental Systems" or the AABC "National Standards for Total System Balance".

- D. Fan air volume shall be adjusted to within 5% of design, and diffuser air volumes to within 10% of design.
- E. Reporting (Submit five copies of final Test Report)
  - 1. Complete nameplate data and equipment schedule number for all rotating equipment.
  - 2. Design and actual duct and diffuser volumes. Prepare a diagram showing flow measurement points.
  - 3. Record coil air pressure drop, filter pressure drop, external static pressure, and fan static pressure.

3.11 TESTING (PIPING):

- A. Upon completion of each system of work under this division, and at a designated time, all piping shall be pressure tested for leaks in the presence of the owner. Owner shall be notified five days before testing is to be conducted and all tests shall be conducted in the presence of the owner. All equipment required for test shall be furnished by contractor at his expense. All tests shall be performed as specified hereinafter. If inspection or tests show defects, such defective work or material shall be replaced and inspection and tests repeated at no additional cost to owner. Make tight any leaks. Repeat tests until system is proven tight. Caulking of leaks will not be permitted. All equipment not capable of withstanding the test pressure shall be valved off during the test.
- B. All refrigerant piping and apparatus shall be tested with dry carbon dioxide or nitrogen plus a small amount of refrigerant. All refrigerating equipment shall be tested under vacuum and shall show no evidence of leakage with an absolute pressure of .20 inch mercury gauge, sustained for a period of one hour without pumping. Leaks shall be corrected by remaking the joint. Test pressures shall be as follows:

High Side	Low Side
Refrigerant 410A - 400 psi	Refrigerant 410A - 350 psi
- C. Install a card conspicuously and as near as practicable to the refrigerant condensing unit giving instructions for the operation of the system, including precautions to be observed in case of a breakdown or leak.
- D. Each refrigerating system shall be provided with an easily legible metal sign permanently attached and easily accessible, indicating thereon the name and address of the manufacturer or installer, the kind and total number of pounds of refrigerant contained in the system and the field test pressure applied.
- E. Systems containing more than 100 lbs. (45.4 kg) of refrigerant shall have all piping, valves, remote controls and pressure limiting devices tagged or color coded. Instructions as specified in 2802.1.1 shall clearly identify all such devices and their usage in the operation of the system.

3.12 ADJUSTMENT AND TRIAL RUNS:

- A. Upon completion of all work, the contractor shall operate the system in the presence of the owner for the purpose of demonstrating quiet and satisfactory operation, the proper setting of controls, safety and relief valves, and cleanliness of system. Heating and cooling shall be tested separately during periods approaching design conditions and shall fully demonstrate fulfillment of capacity requirements. Test procedures shall



be in accordance with applicable portions of ASME, ASHRAE, and other generally recognized test codes as far as field conditions will permit. Any changes or adjustment required shall be made by the contractor without additional expense to owner.

- B. Document and submit all operating conditions (startup report) of equipment during trial runs and after test and balance is complete. Include in the report:
  - 1. Ambient air temperature
  - 2. Design operating temperatures and flow rates
  - 3. Entering and leaving air temperatures across each coil or heating device
  - 4. Amp draw of all motors and nameplate amps
  - 5. Voltage at each piece of equipment
  - 6. Refrigerant pressures and temperatures

3.13 OPERATION AND MAINTENANCE INSTRUCTIONS, AND MAINTENANCE MANUAL:

- A. Upon completion of work, and at a time designated by the engineer, a competent employee of the contractor shall be provided to instruct a representative of the owner in the operation and maintenance of the system.
- B. Minimum instruction period shall be:
  - 1. Air Conditioning System - 1/2 day
- C. Maintenance Manuals: The contractor shall compile and bind five (5) sets of all manufacturer's instructions and descriptive literature on all items of equipment furnished under this work. These instructions shall be delivered through the general contractor to the engineer for approval prior to final inspection.
- D. Instructions shall include:
  - 1. Warranty letter signed by the Mechanical Contractor.
  - 2. Index for each section with each section properly identified.
  - 3. Complete equipment list with model and serial numbers.
  - 4. Complete equipment list with filter sizes and quantities.
  - 5. Copy of one complete, approved submittal for each equipment section.
  - 6. Description of each system, including manufacturer's literature for all items.
  - 7. Start-up and shut-down description for each system.
  - 8. Suggested operating and maintenance instructions with frequency of maintenance indicated.
  - 9. Parts list for all items of equipment.
  - 10. Name, address, and telephone number of nearest sales and service organization for all items of equipment.
  - 11. Startup reports.
  - 12. Test and Balance Reports
- E. Manuals shall be 8-1/2 x 11 inch text pages bound in three ring expansion binders with a hard durable cover with clear plastic pocket on front for title page. Prepare binder covers with printed subject title of manual, title of project, date, and volume number when multiple binders are required. Printing shall be on face and spine. Provide a table of contents for each volume. Internally subdivide the binder contents with divider sheets with typed tab titles under reinforced plastic tabs. Provide directory listing as appropriate with names addresses, and telephone numbers of design

- F. consultant, Contractor, subcontractors, equipment suppliers, and nearest service representatives.

END OF SECTION 23 00 10



PART 1 - GENERAL

1.1 General Requirements:

- A. This Section of the Specifications and related drawings describe requirements pertaining to Air Conditioning, Heating and Ventilation work, including applicable HVAC Insulation in separate Section 230700 and Vibration Isolation and Seismic Restraint in separate Section 230548. All work shall comply with Section 230010 - General Provisions - HVAC.
- B. Construct rectangular ductwork to meet all functional criteria defined in Section VII, of the SMACNA "HVAC Duct Construction Standards Metal and Flexible" 2005 Edition. All ductwork must comply with all local, state and federal code requirements.

PART 2 - PRODUCTS

2.1 SUBMITTALS:

- A. Ductwork shop drawings must be submitted for approval by Engineer. Any ductwork installed without prior approval by the Engineer shall be replaced at the expense of the contractor.

2.2 QUALITY ASSURANCE:

- A. The contractor must comply with this specification in its entirety. At the discretion of the Engineer, sheet metal gauges, and reinforcing may be checked at various times to verify all duct construction is in compliance.

2.3 DUCTS, PLENUM, ETC.:

- A. As indicated on drawings, provide a system of metal ducts for supply, return and exhaust air.
- B. All sheet metal, ducts, casing, plenums, etc., of sizes indicated, shall be constructed from prime galvanized sheet steel.

2.4 DUCTS THRU WALLS:

- A. Where ducts pass through masonry walls, protect duct from contact with wall by 1/2 inch thick filler of fire rated felt or sponge rubber.
- B. Provide sheet metal flashing around all duct penetrations.
- C. Ducts shall be properly sealed per the fire rating and UL assembly.

2.5 INSTRUMENT TEST HOLES:

- A. Install for air handling units instrument test holes in supply, return and outside air duct. Instrument test connections shall be Ventlock Model 699-2, or equal, and shall be located in accessible locations.

2.6 AIR DISTRIBUTION:

- A. Devices shall quietly and draftlessly deliver and/or remove air quantities required to attain conditions indicated. Devices shall have sponge rubber gaskets for sealing

devices to walls and ceilings. Exposed surfaces shall have baked enamel finish of manufacturer's standard colors noted.

- B. All air distribution equipment and accessories shall be as scheduled on drawings.

2.7 METAL DUCTWALL:

- A. All ducts shall be constructed of G-90 or better galvanized steel (ASTM A653) LFQ, chem treat. Galvanized metal ducts shall be a minimum thickness of 26 gage.
- B. Support, access doors not part of ducts, bar or angle reinforcing damper rods and items made of uncoated mild steel shall be painted with two coats of primer or provide galvanized equivalent.
- C. Low Pressure Supply, Return, and Exhaust Duct:
  - 1. Ductwork on low pressure supply and return systems shall be fabricated to meet minimum 2" w.g. pressure class in accordance with SMACNA Duct Construction Standard.

2.8 RECTANGULAR DUCT LONGITUDINAL SEAMS:

- A. Pittsburgh lock shall be used on all longitudinal seams. All longitudinal seams will be sealed with mastic sealant. Button punch snap lock is not acceptable.

2.9 DUCT JOINTS:

- A. Ductmate or W.D.C.I. proprietary duct connection systems will be accepted as an alternative to SMACNA duct construction standards. Duct constructed using these systems will refer to the manufacturers guidelines for sheet gauge, intermediate reinforcement size and spacing, and joint reinforcements.
- B. Ductmate 440 or a Butyl Rubber Gasket which meets Mil-C 18969B, Type II Class B, TT-C-1796A, Type II Class B, and TTS-S-001657 must also pass UL-723. This material, in addition to the above, shall not contain vegetable oils, fish oils, or any other type vehicle that will support fungal and/or bacterial growth associated with dark, damp areas of ductwork. The recommended test procedure for bacterial and fungal growth is found in 21CFR 177, 1210 closures with sealing gaskets for food containers.

2.10 ACCESS DOORS IN DUCTWORK:

- A. Provide access doors at all apparatus requiring service and inspection, including fire dampers and fire smoke dampers, and where indicated. Access doors for 2" pressure class duct shall be hinged or Ductmate Sandwich Access Doors as manufactured by Ductmate Industries, Inc., or equal. Access doors for 4" pressure class duct shall be Ductmate Sandwich Access Doors as manufactured by Ductmate Industries, Inc., or equal. Access doors shall be double wall construction with high density fiberglass insulation with R value equal to or greater than the duct insulation. Doors shall be of adequate size (12" x 12" minimum) as required to allow easy access to hardware which needs to be maintained. In accordance with the requirements of the International Building Code, contractor shall permanently mark any access doors or other openings that serve as a means of access to fire, smoke and fire/smoke dampers with ½" letters reading "Fire Damper", "Smoke Damper", or "Fire/Smoke Damper". Label shall be permanently and securely attached.

2.11 SEALERS:

- A. Duct sealer shall be flexible, water-based, adhesive sealant designed for use in all pressure duct systems. After curing, it shall be resistant to ultraviolet light and shall seal out water, air, and moisture. Sealer shall be UL listed and conform to NFPA 90A & 90B. Sealer shall be Childers CP-145A, or equal.

2.12 DUCTWORK HANGER/SUPPORT:

- A. Hang and support ductwork as defined by SMACNA, Chapter 5 2005 Manual, First Edition, or as defined within. Hanger spacing not to exceed 8'.

2.13 TURNING VANES:

- A. Turning vanes shall be double wall turning vanes fabricated from the same material as the duct. Tab spacing shall be SMACNA Standard. Rail systems with non-standard tab spacings shall not be accepted. All tabs shall be used, do not skip tabs. Mounting rails shall have friction insert tabs which align the vanes automatically. Vanes shall be subjected to tensile loading and be capable of supporting 250 lbs. when fastened per the manufacturers instructions.

2.14 FIRE DAMPERS:

- A. Provide at locations shown on plans, or in accordance with details, schedules or specifications Ruskin fire dampers of appropriate style, or approved equal. Provide fire dampers at all locations as required to comply with National Fire Protection Association Regulations, applicable city requirements, and all local codes or ordinances having jurisdiction. Construct fire dampers as follows:
- B. Fire dampers shall be mounted in a U.L. approved integral sleeve or a No. 16 U.S. Gauge welded steel sleeve 12 inches long. Blades shall be hinged on brass trunnions and counter-weighted when necessary to assure closing. Blade thickness and other construction details shall conform to National Fire Protection Association requirements as set forth in NFPA Bulletin No 90A, and bear U.L. label. Dampers shall be held in open position by 165 degrees fusible link and arranged to lock in position on closure.
- C. Fire dampers in medium pressure duct applications shall be provided with a fully welded, high free area and air tight transition.
- D. Breakaway connections at fire damper sleeves with duct connections shall be made using UL approved "S and Drivemate Connections" or UL approved "Ductmate Breakaway Connections".

2.15 PIPE AND FITTINGS:

- A. Schedule of pipe and fittings: Piping and fittings shall conform to requirements as indicated herein.
- B. All pipe shall be domestically produced from domestic forgings.

2.16 SCHEDULE OF PIPING

SERVICE	ITEM	PIPING	FITTINGS	FLANGES OR UNIONS
Unitary	2" and smaller	Type L, Hard	Solder type	Wrought

Condensate Drain	drawn copper	wrought copper	solder copper to copper
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#### 2.17 REFRIGERANT PIPING:

- A. General: Execute all refrigerant piping with stamped type "ACR" hard copper and long radius, wrought copper, sweat fittings with tolerance not to exceed 3/1000 of an inch. All joints shall be made with silver solder. Submit equipment manufacturer's suggested piping diagram for approval.
- B. After refrigerant piping has been installed and tested, each system shall be evacuated and charged with proper refrigerant of quantity as recommended by manufacturer.

#### 2.18 AIR CONDITIONING UNITS:

- A. Provide complete system of air conditioning units and accessories as scheduled on the drawings. All units shall carry a five (5) year compressor warranty.

### PART 3 - EXECUTION

#### 3.1 DUCTWORK, GENERAL:

- A. Drawings show general arrangement of duct. Provide all ductwork required to complete installation and avoid interferences. Installation shall conform with applicable portions of Section 230010, General Provisions, HVAC. Fabricate ducts as job progresses, using actual job measurements and referring to architectural, structural, electrical, plumbing and equipment drawings in order to avoid conflicts. Where space limitations preclude use of ducts and fittings as shown, consult Engineer for instructions. All ductwork, offsets, fittings, etc. required to make a complete and efficiently operating installation are included in this contract and shall be fabricated and installed in accordance with SMACNA Standards for the application unless noted otherwise herein.
- B. All duct dimensions shown on drawings are "inside clear". The sizes of acoustically lined ducts and dampers in ducts shall be increased accordingly. Ducts shall be smooth on inside.
- C. Provide flexible duct connectors at all ductwork connections to equipment with fans, motors or rotating components.
- D. Install double thickness turning vanes in duct fittings having centerline radius less than 1-1/2 times width of duct.
- E. Support ducts from building structure with 1 inch wide galvanized steel bands per SMACNA recommendations. Wire hangers and nylon straps will not be acceptable.
- F. Seal all joints in supply, return and exhaust ducts with Childers CP-145 Veloseal, or McGill Airseal, DuroDyne or equal water based synthetic duct sealant, or equal.
- G. Upon complete installation of ducts, clean entire system of rubbish, plaster, dirt, etc. before installing any outlets. After installation of outlets and connections to fans are made, blow out entire system with all control devices wide open.

3.2 FIRE DAMPERS:

- A. Fire dampers shall be securely anchored to floor or wall, and installed by bolting retaining angles to the sleeve on each side of the wall. Wall and floor penetrations shall be fire sealed with an approved UL listed firestop system as manufactured by 3M, Hilti, Metacaulk or equal for the wall or floor type penetrated. A suitable access door shall be provided for each fire damper. In accordance with the requirements of the International Building Code, contractor shall permanently mark any access doors or other openings that serve as a means of access to fire dampers with ½" letters reading "Fire Damper". Label shall be permanently and securely attached.

3.3 PIPING, GENERAL:

- A. All piping shall conform with Section 230010 - General Provisions - HVAC.
- B. Provide a flange or union in screwed or welded pipe where pipe connects to equipment. At control valves, install union in each pipe connecting to the device. Screwed unions shall not be installed where they will be subjected to bending stresses, as in expansion loops or offsets.
- C. Provide flexible pipe connectors at all piping connections to pumps.
- D. Run pipes parallel to walls and ceilings. Wherever pipes change size, use eccentric fittings. Run piping so as not to obstruct walking or service areas.
- E. Pipe and equipment locations shown are approximate. Exact location of equipment, pipes, and chases to be as approved and determined in field to avoid other pipes and maintain structural clearances. Use actual job dimensions and equipment shop drawings for roughing.
- F. Piping to comply with best trade practice. Provide clearance between pipe and building structure so pipes can expand without damage to building structure.
- G. Pipe water relief drains, blowdown, and other drains to, but not into, the most convenient floor drain or where otherwise directed.
- H. When soldering refrigerant pipe joints, a dry nitrogen purge shall be required through the inside of the pipe to prevent oxidation.

3.4 EQUIPMENT, GENERAL:

- A. All equipment specified herein shall be installed in accordance with manufacturer's published installation instructions and these specifications. All items shall have adequate clearances for access and maintenance. Each item of equipment shall be performance tested to verify compliance with specifications. Certified data sheets of successful performance tests shall be included in operating manuals.

3.5 AUTOMATIC TEMPERATURE CONTROL:

- A. General: Provide a complete system of temperature controls as described herein. The system shall be installed complete by competent mechanics in the employment of the control manufacturer. All control wiring shall be installed in EMT conduit with control and power wiring in separate conduits.



- B. Wiring for low voltage circuits (24 volts or less) may be No. 16 up to 50 feet, and above 50 feet shall be of size to limit voltage drop to 5 percent. Interlock wiring shall be as recommended by equipment manufacturer.
- C. Provide automatic changeover 7 day programmable thermostat per the equipment schedule.

3.6 SUBMITTALS:

- A. Provide submittals as required in Section 230010. Submit start up reports per Section 230010. Submit test and balance report per 230010. Submit manufacturer's installation, operation, and maintenance instructions.

END OF SECTION 23 05 00

PART 1 - GENERAL

1.1 WORK INCLUDED:

- A. General Requirements: This section shall include all insulation as required for installation on all items as specified hereinafter and/or as indicated. All insulations shall be installed in a workmanlike manner by qualified workers in the employment of an independent insulation contractor. Costs of insulation shall be included as part of work by contractor as applicable to his section of work. No separate bid is to be included for insulation work.
- B. Fire hazard classification for all material shall not exceed flame spread of 25 and smoke development of 50 as classified by Underwriters Laboratories under Test Method ASTM E-84 and acceptable under NFPA Standards. This is to apply to the complete system and be a composite rating of insulation material with jacket or facings, vapor barrier, joint sealing tapes, mastic and fittings.
- C. Prior to commencing any work, submit data sheets for engineer's approval of all material proposed to be used on this project.

PART 2 - PRODUCTS

2.1 ABOVE GROUND PIPING:

- A. Refrigerant and Condensate Drain Pipe Insulation:
  - 1. Insulation material shall be a flexible, closed-cell elastomeric insulation in tubular form equal to AP Armaflex, or Aerocell, or FlexTherm. This product meets the requirements as defined in ASTM C 534, "Specification for preformed elastomeric cellular thermal insulation in tubular form." Insulation materials shall have a closed-cell structure to prevent moisture from wicking which makes it an efficient insulation. Insulation material shall be manufactured without the use of CFC's, HFC's or HCFC's. It is also formaldehyde free, low VOC's, fiber free, dust free and resists mold and mildew.
  - 2. Materials shall have a flame spread index of less than 25 and a smoke-developed index of less than 50 when tested in accordance with ASTM E 84, latest revision. In addition, the product, when tested, shall not melt or drip flaming particles, the flame shall not be progressive and all materials shall pass simulated end-use fire tests.
  - 3. Materials shall have a maximum thermal conductivity of 0.27 Btu-in./h-ft<sup>2</sup>- °F at a 75°F mean temperature when tested in accordance with ASTM C 177 or ASTM C 518, latest revisions. Materials shall have a maximum water vapor transmission of 0.08 perm-inches when tested in accordance with ASTM E 96, Procedure A, latest revision.
  - 4. When supported with uni-strut an insulation sleeve under the clamp is required equal to Armacell Armafix, Aerocell Aerofix, or Cooper B-Line.

2.2 JACKET FOR OUTDOOR PIPING:

- A. All insulation outside (including insulation options) shall be protected with aluminum jacketing with factory applied moisture barrier. The aluminum jacketing shall be 0.016

thickness and be of 3003 alloy and H-14 temper. Jacketing shall be applied with 2-inch circumferential and 1-1/2 inch longitudinal lap and secured with 3/8 inch wide aluminum bands, 8 inches on center.

- B. All elbows shall be covered with 2 piece aluminum insulation covers, manufactured from 110 aluminum alloy in .024" thickness, Childers Aluminum E11-Jacs or equal.

2.3 PIPE INSULATION THICKNESS:

- A. Piping for the following systems shall be insulated to the thickness listed:

<u>Item</u>	<u>Insulation Thickness (Inches)</u>
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Armaflex K = 0.25

Cold Pipes:

Condensate Drain Piping	1"
-------------------------	----

Refrigerant Suction	1"
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2.4 DUCTWORK INSULATION:

- A. Duct Insulation (Flexible, Internal):

- 1. Line all supply and return ducts as noted on drawings with 1-1/2 pound density, 1 inch thick duct liner equal to Owens Corning Aeroflex PLUS. Liner shall meet requirements of ASTM C1338, G21 and G22 with respect to resistance to microbial growth.

PART 3 - EXECUTION

3.1 PIPE INSULATION:

- A. All insulation shall be applied to clean, dry surfaces butting all sections firmly together and finishing as specified hereinafter.
- B. All vapor barriers shall be sealed, and shall be continuous throughout. No staples shall be used on any vapor barrier jacket unless sealed with vapor barrier coating or vapor barrier tape.
- C. Insulation of all insulated lines shall be interpreted as including all pipe, valves, fittings and specialties comprising the lines, except flanged unions and screwed unions on hot piping.
- D. Pipe Insulation Protection: Direct contact between pipe and hangers shall be avoided. Hanger shall pass outside of a sheet metal protection saddle which shall cover a section of high density insulation (cellular glass or calcium silicate), of sufficient length to support the weight of the pipe without crushing the insulation. The vapor barrier shall be continuous behind the saddle or shall be lapped over the saddle and securely cemented thereto.
- E. Refrigerant Pipe Insulation: Armaflex insulation shall be slip fit over all tubing. Under no circumstances shall insulation be slit to fit over pipe already in place. Sufficient

length shall be provided at all bends or turns to prevent the insulation from being pulled too tight and cracking. All seams and butt joints shall be adhered and sealed using Armaflex 520 or 520 BLVAdhesive or equal. Direct contact between pipe and hangers shall be avoided. Hanger shall pass outside of a sheet metal protection saddle which shall cover a section of high density insulation (cellular glass or calcium silicate), of sufficient length to support the weight of the pipe without crushing the insulation. The vapor barrier shall be continuous behind the saddle or shall be lapped over the saddle and securely cemented thereto.

3.2 ALUMINUM JACKET:

- A. Jacketing shall be applied with 2-inch circumferential and 1-1/2 inch longitudinal lap and secured with 3/8 inch wide aluminum bands, 8 inches on center and at joints.

3.3 DUCTWORK INSULATION:

- A. Flexible Insulation (Internal):
  - 1. Applications: Duct Liner shall be applied to the interior of metal ducts using Childers CP-121 HV Duct Liner Adhesive or an equal product having a flame spread of less than 25 and a smoke development of less than 50 and classified such by Underwriters Laboratories. Exposed edges of insulation shall be coated with a heavy layer of Childers CP-135 CHIL-SPRED or equal to eliminate erosion of fibers.
  - 2. When duct height or plenum walls exceed 24 inches and when duct widths exceed 12 inches, resistance welded mechanical fasteners will be used in addition to duct liner adhesive. Fasteners shall start within 3 inches of the upstream transverse edges of the liner and 3 inches from the longitudinal joints. Fasteners should be spaced a maximum of 6 inches on center around the perimeter of the duct, except that they may be a maximum of 6 inches from a corner break. Elsewhere they shall be a maximum of 18 inches on center.
  - 3. Insulation shall extend the full length of each duct section to permit butting firmly at the duct joints. All joints shall be tightly sealed with CP-135 or equal.

END OF SECTION 23 07 00



**SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL**

**GENERAL ELECTRICAL**

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Provide all labor, materials, equipment and supervision to construct complete and operable electrical systems as indicated on the drawings and specified herein.
- B. All materials and equipment used shall be new, undamaged and free from any defects.

1.2 ELECTRICAL DRAWINGS

- A. Electrical contract drawings are diagrammatic and indicate the general arrangement of electrical equipment. Do not scale electrical plans.
- B. Coordinate installation of electrical equipment with the mechanical equipment and access thereto.
- C. Discrepancies shown on different drawings, between drawings and specifications or between documents and field conditions shall be installed to provide the better quality or greater quantity of work; or, comply with the more stringent requirement; either or both in accordance with the A/E's interpretation.

1.3 EXISTING SERVICES AND FACILITIES

- A. **Damage to Existing Services:** Existing services and facilities damaged by the Contractor through negligence or through use of faulty materials or workmanship shall be promptly repaired, replaced, or otherwise restored to previous conditions by the Contractor without additional cost to the Owner.
- B. **Interruption of Services:** Interruptions of services necessary for connection to or modification of existing systems or facilities shall occur only at prearranged times approved by the Owner. Interruptions shall only occur after the provision of all temporary work and the availability of adequate labor and materials will assure that the duration of the interruption will not exceed the time agreed upon.
- C. **Removed Materials:** Existing materials made unnecessary by the new installation shall be stored on site. They shall remain the property of the Owner and shall be stored at a location and in a manner as directed by the Owner. If classified by the Owner's authorized representative as unsuitable for further use, the material shall become the property of the Contractor and shall be removed from the site at no additional cost to the owner.

PART 2 - PRODUCTS

2.1 FIRESTOPPING:

- A. A firestop system shall be used to seal penetrations of electrical conduits and cables through fire-rated partitions per NEC 300.21, and NEC 800.26. The firestop system shall be qualified by formal performance testing in accordance with ASTM E-814, or UL 1479.
- B. The firestop system shall consist of a fire-rated caulk type substance and a high temperature fiber insulation. It shall be permanently flexible, waterproof, non-toxic, smoke and gas tight and have a high adhesion to all solids so damming is not required. Only metal conduit shall be used in conjunction with this system to penetrate fire rated partitions. Install in strict compliance with manufacturer's recommendations. 3M or approved equal.
- C. Comply with TIA/EIA-569-A, Annex A, "Firestopping."
- D. Comply with BICSI TDMM, "Firestopping Systems" Article.

### PART 3 - EXECUTION

#### 3.1 PRODUCT INSTALLATION, GENERAL

- A. Except where more stringent requirements are indicated, comply with the product manufacturer's installation instructions and recommendations, including handling, anchorage, assembly, connections, cleaning and testing, charging, lubrication, startup, test operation and shut-down of operating equipment. Consult with manufacturer's technical experts, for specific instructions on unique product conditions and unforeseen problems.
- B. Protection and Identification: Deliver products to project properly identified with names, models numbers, types, grades, compliance labels and similar information needed for distinct identifications; adequately packaged or protected to prevent deterioration during shipment, storage and handling. Store in a dry, well ventilated, indoor space, except where prepared and protected by the manufacturer specifically for exterior storage.
- C. Clean all equipment, inside and out, upon completion of the work. Scratched or marred surfaces shall be touched-up with touch-up paint furnished by the equipment manufacturer.
- D. Replace all equipment and materials that become damaged.

#### 3.2 ELECTRICAL WORK:

- A. Electrical work shall be accomplished with all affected circuits or equipment de-energized. When an electrical outage cannot be accomplished in this manner for the required work, the following requirements are mandatory:
  - 1. Electricians must use full protective equipment (i.e., certified and tested insulating material to cover exposed energized electrical components, certified and tested insulated tools, etc.) while working on energized systems in accordance with NFPA 70E.
  - 2. Electricians must wear personal protective equipment while working on energized systems in accordance with NFPA 70E.

3. Before initiating any work, a job specific work plan must be developed by the contractor with a peer review conducted and documented by the Contractor. The work plan must include procedures to be used on and near the live electrical equipment, barriers to be installed, safety equipment to be used and exit pathways.
4. Work on energized circuits or equipment cannot begin until prior written approval is obtained from the Owner/ Architect.

## **LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES**

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This section includes the requirements for the following:
  1. Wire and cable for 600 volts and less.
  2. Wiring connectors and connections.

### PART 2 - PRODUCTS

#### 2.1 WIRING REQUIREMENTS

- A. Exposed Dry Interior Locations: Use only THHN, THHW, or XHHW in raceway.
- B. Metal Clad (MC) cable shall not be used unless prior approval has been granted by the architect and engineer.

#### 2.2 BUILDING WIRE

- A. Conductor: Copper.
- B. Insulation Voltage Rating: 600 volts.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
- B. Motor connections shall be made with compression connectors forming a bolted in-line or stub-type connection.
- C. All splices made underground or in the pipe basement shall be rated suitable for water immersion.



## **GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS**

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Grounding and bonding components.
- B. Provide all components necessary to complete the grounding system(s).

### PART 2 - PRODUCTS

#### 2.1 CONDUCTORS

- A. Bonding Jumper Braid: Copper braided tape, sized for application.
- B. Electrical Grounding conductors: Unless otherwise indicated, provide bare or green insulated stranded copper electrical grounding conductors sized according to NEC or as shown or specified. Provide green insulated for conductors sized No. 10 AWG and smaller.

### PART 3 - EXECUTION

#### 3.3 SECONDARY EQUIPMENT AND CIRCUITS

- A. Branch Circuits: Install equipment grounding conductors with all feeders and power branch circuits, sized in accordance with Article 250 of NFPA 70.
- B. Metallic Conduit: Metallic conduits which terminate without mechanical connection to an electrical equipment housing by means of locknut and bushings or adapters, shall be provided with grounding bushings. Connect bushings with a bare grounding conductor to the equipment ground bus.

## **HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS**

### PART 1 - GENERAL (NOT USED)

### PART 2 - PRODUCTS.

#### 2.1 MATERIALS

- A. Hangers, Supports, Anchors, and Fasteners - General: Corrosion-resistant materials of size and type adequate to carry the loads of equipment and conduit, including weight of wire in conduit.
- B. Supports: Fabricated of structural steel or formed steel members; galvanized, or *PVC*
- C. Anchors and Fasteners:

1. Do not use powder-actuated anchors.
2. Concrete Structural Elements: Use precast inserts, expansion anchors, or preset inserts.
3. Steel Structural Elements: Use beam clamps, steel spring clips, steel ramset fasteners, or welded fasteners.
4. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
5. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.
6. Solid Masonry Walls: Use expansion anchors or preset inserts.
7. Sheet Metal: Use sheet metal screws.
8. Wood Elements: Use wood screws.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Rigidly weld support members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- B. In wet and damp locations use steel channel supports to stand cabinets, disconnects and panelboards 1 inch (25 mm) off wall.
- C. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

**RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS**

PART 1 - GENERAL (NOT USED)

PART 2 - PRODUCTS

2.1 CONDUIT REQUIREMENTS

- A. Conduit Size: Comply with NFPA 70.
  1. Minimum Size: 3/4 inch
- B. Wet and Damp Locations:
  1. Interior: RMC, IMC, or LTFMC

2.2 METAL CONDUIT

- A. Rigid Steel Galvanized Conduit (RMC): ANSI C80.1.
- B. Intermediate Metal Conduit (IMC): ANSI C80.6.
- C. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

1. Standard threaded couplings, locknuts, bushings, and elbows: Only steel or malleable iron materials are acceptable. Integral retractable type IMC couplings are also acceptable.
2. Die-cast or pressure-cast zinc-alloy fittings or fittings made of "pot metal" are prohibited.
3. Bushings: Metallic insulating type, consisting of an insulating insert molded or locked into the metallic body of the fitting. Bushings made entirely of metal or nonmetallic material are not permitted.
4. Sealing fittings: Threaded cast iron type. Use continuous drain type sealing fittings to prevent passage of water vapor. In concealed work, install fittings in flush steel boxes with blank cover plates having the same finishes as that of other electrical plates in the room.

### 2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LTFMC) Description: Interlocked steel construction with PVC jacket. Liquid-tight flexible metal conduit: Shall Conform to UL 360.
- B. Fittings: UL 514B and ANSI/ NEMA FB1.
  1. Only steel or malleable iron materials are acceptable.
  2. Die-cast or pressure-cast zinc-alloy fittings or fittings made of "pot metal" are prohibited.
  3. Fittings must incorporate a threaded grounding cone, a steel or plastic compression ring, and a gland for tightening. Connectors shall have insulated throats.
  4. Coating for Fittings for PVC-Coated Conduit: Minimum thickness, 0.040 inch, with overlapping sleeves protecting threaded joints.

## PART 3 - EXECUTION

### 3.1 CONDUIT INSTALLATION

- A. Waterproofing: At floor, exterior wall, and roof conduit penetrations, completely seal clearances around the conduit and make watertight.
- B. For power conduits install no more than equivalent of three 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one shot bender to fabricate bends in metal conduit larger than 2 inch (50 mm) size.
- C. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control, and expansion joints.

## IDENTIFICATION FOR ELECTRICAL SYSTEMS

### PART 1 - GENERAL (NOT USED)

### PART 2 - PRODUCTS

#### 2.1 NAMEPLATES AND LABELS

- A. Nameplates for Panelboards and Disconnect Switches: Engraved three-layer laminated plastic, black letters on white background unless noted otherwise.

- B. Locations:
  - 1. Each electrical distribution and control equipment enclosure.
- C. Letter Size:
  - 1. Use 1/4 inch (6 mm) letters for identifying grouped equipment and loads.
- D. Labels: Embossed adhesive tape, with 3/16 inch (5 mm) white letters on black background. Use only for identification of individual wall switches, receptacles, and control device stations. Labels shall identify the panel and circuit number (Ex: PANEL: CIRCUIT).

PART 3 - PART 3 EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive nameplates and labels.

3.2 INSTALLATION

- A. Install nameplates and labels parallel to equipment lines.
- B. Secure nameplates to equipment front using corrosion resistant screws.
- C. Provide name plates on all disconnect switches.
- D. Provide updated, typed panel directories where new circuits originate.

**ENCLOSED SWITCHES AND CIRCUIT BREAKERS**

PART 1 - GENERAL

1.1 NOT USED.

PART 2 - PRODUCTS

2.1 MANUFACTURERS: Subject to compliance with requirements, provide products by, but not limited to, one of the following:

- A. Eaton Electrical/Cutler-Hammer
- B. GE Industrial
- C. Square D

2.2 FUSIBLE SWITCH

- A. Fusible Switch Assemblies: NEMA KS 1, Type HD enclosed load interrupter knife switch.
  - 1. Externally operable handle interlocked to prevent opening front cover with switch in ON position.
  - 2. Handle lockable in OFF position.

3. Fuse clips: Designed to accommodate NEMA FU1, Class R or J fuse

## 2.3 ENCLOSURES

- A. Enclosures: NEMA KS 1.
  1. Interior Dry Locations: Type 1.
  2. Exterior (On Roof) Locations: Type 3R.

## PART 3 - EXECUTION

### 3.1 LABELING

- A. Provide nameplates (White with Black letters) on all switch enclosures wherein new circuits are modified or installed. Indicate the following information:
  1. Equipment Switch Serves.
  2. Branch Circuit.
  3. Voltage, phase, wire, short circuit current rating
  4. Date installed

## **FUSES**

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  1. Fuses.

#### 1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain fuses from one source and by a single manufacturer.
- B. Comply with NFPA 70 for components and installation.
- C. Listing and Labeling: Provide fuses specified in this Section that are listed and labeled.
  1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.

#### 1.4 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.
  - 1. Spare Fuses: Furnish quantity equal to 20 percent of each fuse type and size installed, but not less than 1 set of 3 of each type and size.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide fuses by one of the following:
  - 1. Cooper Industries, Inc.; Bussmann Div.
  - 2. General Electric Co.; Wiring Devices Div.
  - 3. Gould Shawmut.
  - 4. Tracor, Inc.; Littelfuse, Inc. Subsidiary.

### 2.2 CARTRIDGE FUSES

- A. Characteristics: NEMA FU 1, nonrenewable cartridge fuse; class as specified or indicated; current rating as indicated; voltage rating consistent with circuit voltage.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine utilization equipment nameplates and installation instructions to verify proper fuse locations, sizes, and characteristics.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 FUSE APPLICATIONS

- A. Motor Branch Circuits: Class RK1, time delay.
- B. Other Branch Circuits: Class RK5, non-time delay.

### 3.3 INSTALLATION

- A. Install fuses in fusible devices as indicated. Arrange fuses so fuse ratings are readable without removing fuse.

## **WIRING DEVICES**

### PAR 1 - GENERAL

#### DEFINITIONS

GFCI: Ground-fault circuit interrupter.

Pigtail: Short lead used to connect a device to a branch-circuit conductor.

#### QUALITY ASSURANCE

Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.

Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

Comply with NFPA 70 - 2011.

### PART 2 - PRODUCTS

#### MANUFACTURERS

Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).  
Hubbell Incorporated; Wiring Device-Kellems (Hubbell).  
Leviton Mfg. Company Inc. (Leviton).  
Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

#### STRAIGHT BLADE RECEPTACLES

Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.  
Products: Subject to compliance with requirements, provide one of the following:

Cooper; 5351 (single), 5352 (duplex).  
Hubbell; HBL5351 (single), CR5352 (duplex).  
Leviton; 5891 (single), 5352 (duplex).  
Pass & Seymour; 5381 (single), 5352 (duplex).

## GFCI RECEPTACLES

General Description: Straight blade, feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.

Duplex GFCI Convenience Receptacles, 125 V, 20 A:

Products: Subject to compliance with requirements, provide one of the following:

Cooper; GF20.  
Hubbell; GF5262.  
Leviton; 6899.  
Pass & Seymour; 2084.

## SNAP SWITCHES

Comply with NEMA WD 1 and UL 20.

Switches, 120/277 V, 20 A:

Products: Subject to compliance with requirements, provide one of the following:

Cooper; 2221 (single pole), 2222 (two pole), 2223 (three way), 2224 (four way).  
Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).  
Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 1224-2 (four way).  
Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).

## WALL PLATES

Single and combination types to match corresponding wiring devices. Provide jumbo size plates.

Plate-Securing Screws: Metal with head color to match plate finish.

Material : Smooth, stainless steel, OR non-breakable nylon, confirm with Architect..

Material for Damp Locations: Metallic with spring-loaded lift, "in use" type cover, and listed and labeled for use in wet locations. Cover shall be capable of being locked with padlock.

## FINISHES

Color: Wiring device catalog numbers in Section Text do not designate device color.

Wiring Devices Connected to Normal Power System: As selected by Architect, unless otherwise indicated or required by NFPA 70 or device listing.



## PART 3 - EXECUTION

### INSTALLATION

Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.

#### Coordination with Other Trades:

Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.

Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.

Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.

Install wiring devices after all wall preparation, including painting, is complete.

#### Conductors:

Do not strip insulation from conductors until just before they are spliced or terminated on devices.

Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.

The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.

#### Device Installation:

Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.

Keep each wiring device in its package or otherwise protected until it is time to connect conductors.

Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.

Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.

When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.

When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.

All switches shall be ADA-compliant, not exceeding 48" aff mounting height to toggle.

#### Receptacle Orientation:

Install ground pin of vertically mounted receptacles down.

**Device Plates:** Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

**Arrangement of Devices:** Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on bottom. Group adjacent switches under single, multigang wall plates.

## FIELD QUALITY CONTROL

### Tests for Convenience Receptacles:

Line Voltage: Acceptable range is 105 to 132 V.

GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.

Using the test plug, verify that the device and its outlet box are securely mounted.

The tests shall be diagnostic, indicating damaged conductors, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

## **PANELBOARDS**

### PART 1 - GENERAL

#### SUBMITTALS

Product Data: For each type of panelboard, overcurrent protective device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

Shop Drawings: For each panelboard and related equipment.

Dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings. Include the following:

Enclosure types and details for types other than NEMA 250, Type 1..

Short-circuit current rating of panelboards and overcurrent protective devices.

UL listing for series rating of installed devices.

Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

#### QUALITY ASSURANCE

Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories through one source from a single manufacturer.

Product Options: Drawings indicate size, profiles, and dimensional requirements of panelboards and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70-2011, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

Comply with NEMA PB 1.

Comply with NFPA 70 - 2011.

## COORDINATION

Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, and encumbrances to workspace clearance requirements.

## EXTRA MATERIALS

Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

Keys: Six spares for each type of panelboard cabinet lock.

## PART 2 - PRODUCTS

### MANUFACTURERS

Manufacturers: Subject to compliance with requirements, provide products by one of the following or equal:

Panelboards, Overcurrent Protective Devices, and Accessories:  
Eaton Corporation; Cutler-Hammer Products.  
General Electric Co.; Electrical Distribution & Protection Div.  
Square D.

### MANUFACTURED UNITS

Enclosures: Surface-mounted cabinets. NEMA PB 1, Type 1.

Rated for environmental conditions at installed location.

Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions.

Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.

Finish: Manufacturer's standard enamel finish over corrosion-resistant treatment or primer coat.

Directory Card: With transparent protective cover, mounted in metal frame, inside panelboard door.

Phase and Ground Buses:

Material: Tin-plated Copper.

Equipment Ground Bus: Adequate for feeder and branch-circuit equipment ground conductors; bonded to box.

Conductor Connectors: Suitable for use with conductor material.

Main and Neutral Lugs: Mechanical type.

Ground Lugs and Bus Configured Terminators: Mechanical type.

Future Devices: Mounting brackets, bus connections, and necessary appurtenances required for future installation of devices.

#### PANELBOARD SHORT-CIRCUIT RATING

UL label indicating series-connected rating with integral or remote upstream overcurrent protective devices. Include size and type of upstream device allowable, branch devices allowable, and UL series-connected short-circuit rating.

#### LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

#### OVERCURRENT PROTECTIVE DEVICES

Molded-Case Circuit Breaker: UL 489, with series-connected rating to meet available fault currents.

Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

GFCI Circuit Breakers: Single- and two-pole configurations with 30-mA trip sensitivity.

Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, trip ratings, and number of poles.

Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.

Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.

### PART 3 - EXECUTION

#### INSTALLATION

Install panelboards and accessories according to NEMA PB 1.1.

Comply with mounting and anchoring requirements specified in Division 16 Section "Electrical Supports and Seismic Restraints."

Mount top of trim 74 inches (1880 mm) above finished floor, unless otherwise indicated.

Mount plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish.

Install overcurrent protective devices and controllers.

Install filler plates in unused spaces.

Arrange conductors in gutters into groups and bundle and wrap with wire ties.

Provide an electrician to open panels for substantial completion observation by Engineer.

#### IDENTIFICATION

Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 26 Section "Electrical Identification."

Create a directory to indicate installed circuit loads. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.

Panelboard Nameplates: Label each panelboard with engraved metal or laminated-plastic nameplate mounted with corrosion-resistant screws.

#### CONNECTIONS

Ground equipment according to Division 26 Section "Grounding and Bonding."

Connect wiring according to Division 26 Section "Conductors and Cables."

#### CLEANING

On completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

### **INTERIOR LIGHTING**

#### PART 1 - GENERAL

#### DEFINITIONS

BF: Ballast factor.

CRI: Color-rendering index.

CU: Coefficient of utilization.

HID: High-intensity discharge.

LER: Luminaire efficacy rating.

Luminaire: Complete lighting fixture, including ballast housing if provided.

RCR: Room cavity ratio.

## SUBMITTALS

Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, finishes, and the following:

- Physical description of lighting fixture including dimensions.
- Emergency lighting units including battery and charger.
- Ballast.
- Energy-efficiency data.
- Lighting Fixtures.
- Suspended ceiling components.
- Structural members to which suspension systems for lighting fixtures will be attached.

Operation and Maintenance Data: For lighting equipment and fixtures to include in emergency, operation, and maintenance manuals.

Shop Drawings: Custom fixtures shall require submittal of detailed, scaled shop drawings showing lamping, material, and UL certification.

Warranties: Special warranties specified in this Section.

## QUALITY ASSURANCE

Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

Comply with NFPA 70 -2011.

## COORDINATION

Coordinate layout and installation of lighting fixtures and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, and partition assemblies.

## PART 2 - PRODUCTS

### MANUFACTURERS

Provide products listed in Lighting Fixture Schedule on the drawings or prior approved equals.

### LIGHTING FIXTURES AND COMPONENTS, GENERAL REQUIREMENTS

Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.

Comply with UL 1598.

Metal Parts: Free of burrs and sharp corners and edges.

Sheet Metal Components: Steel, unless otherwise indicated. Form and support to prevent warping and sagging.

Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

Wire Guards: Provide factory fabricated protective wire guards for lighting fixtures made specifically for model number.

Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:

White Surfaces: 85 percent.

Specular Surfaces: 83 percent.

Diffusing Specular Surfaces: 75 percent.

Laminated Silver Metallized Film: 90 percent.

#### BALLASTS FOR LINEAR FLUORESCENT LAMPS

Electronic Ballasts: Comply with ANSI C82.11; instant-start type, unless otherwise indicated, and designed for type and quantity of lamps served. Ballasts shall be designed for full light output unless dimmer or bi-level control is indicated.

Sound Rating: A.

Total Harmonic Distortion Rating: Less than 20 percent.

BF: 0.85 or higher.

Parallel Lamp Circuits: Multiple lamp ballasts shall comply with ANSI C 82.11 and shall be connected to maintain full light output on surviving lamps if one or more lamps fail.

#### EMERGENCY FLUORESCENT POWER UNIT

Internal Type: Self-contained, modular, battery-inverter unit, factory mounted within lighting fixture body and compatible with ballast. Comply with UL 924.

Emergency Connection: Operate 2 fluorescent lamp(s) continuously at an output of 1400 lumens each. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.

Test Push Button and Indicator Light: Visible and accessible without opening fixture or entering ceiling space.

Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.

Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

Battery: Sealed, maintenance-free, nickel-cadmium type.

Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.

## EXIT SIGNS

Description: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.

### Internally Lighted Signs:

Lamps for AC Operation: LEDs, 70,000 hours minimum rated lamp life.

Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.

Battery: Sealed, maintenance-free, nickel-cadmium type.

Charger: Fully automatic, solid-state type with sealed transfer relay.

Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.

Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.

LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

## FLUORESCENT LAMPS

Low-Mercury Lamps: Comply with EPA's toxicity characteristic leaching procedure test; shall yield less than 0.2 mg of mercury per liter when tested according to NEMA LL 1.

T8 rapid-start low-mercury lamps, rated 32 W maximum, nominal length of 48 inches (1220 mm), 2800 initial lumens (minimum), CRI 75 (minimum), color temperature as indicated on drawings, and average rated life 20,000 hours, unless otherwise indicated.

## LIGHTING FIXTURE SUPPORT COMPONENTS

Comply with Division 26 Section "Electrical Supports and Seismic Restraints" for channel- and angle-iron supports and nonmetallic channel and angle supports.

Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm).

## PART 3 - EXECUTION

### INSTALLATION

Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.

Support for Lighting Fixtures in or on Grid-Type Suspended Ceilings: Use grid as a support element.

Support Clips: Fasten to lighting fixtures and to ceiling grid members at or near each fixture corner with clips that are UL listed for the application.



Fixtures of Sizes Less Than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch (20-mm) metal channels spanning and secured to ceiling tees.

FIELD QUALITY CONTROL

Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

**END OF SECTION 260500**

