



Upstate CASB Roof Replacement

Spartanburg, South Carolina

Construction Documents

Prepared For

University of South Carolina - Upstate
Facilities Management, 800 University Way
Spartanburg, SC 29303

Owner Project Number: H34-9543-JM-A

ADC Project Number: 11338

January 21, 2013

1226 YEAMANS HALL ROAD
HANAHAN, SC 29410
843-566-0161
fax 843-566-0162

ADCENGINEERING.COM



Upstate CASB Roof Replacement

Spartanburg, South Carolina

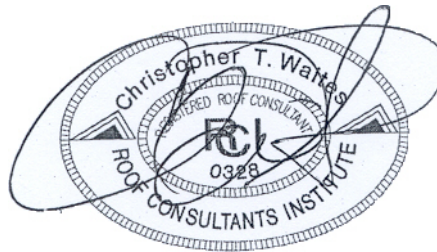
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Mr. Christopher T. Waites, RRC, RRO, CDT
ADC Engineering, Inc.

January 29, 2013

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Owner Project Number: H34-9543-JM-A

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LIST OF DRAWINGS

Upstate CASB Roof Replacement

Owner Project Number: H34-9543-JM-A

Sheet Number	Title
R101	Cover Sheet
R102	General Notes
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R105	Taper Roof Plan
R201	Details / Sections
R202	Details / Sections
R203	Details / Sections

**SE-310
REQUEST FOR ADVERTISEMENT**

2011 Edition
Rev. 7/20/2011

PROJECT NAME: Upstate CASB Roof Replacement

PROJECT NUMBER: H34-9543-JM-A

PROJECT LOCATION: USC Upstate, Spartanburg, SC

Contractor may be subject to performance appraisal at close of project

BID SECURITY REQUIRED? Yes No

PERFORMANCE & PAYMENT BONDS REQUIRED? Yes No

CONSTRUCTION COST RANGE: \$200,000 - \$300,000

DESCRIPTION OF PROJECT: Base Bid work includes total removal of the existing low sloped roofing systems down to the structural deck for approximately 200 squares of roof and repairs to the existing slate roofing system. Roof replacement includes minor deck repairs, rough carpentry, roof insulation, including taper, and a three-ply and modified cap sheet roof system. All associated sheet metal components and accessories are included. Removal of minor, non-friable asbestos containing roof materials is included. Bidders are responsible for obtaining all bid information and updates from <http://purchasing.sc.edu>. Small and minority business participation is encouraged.

A/E NAME: ADC Engineering, Inc.

A/E CONTACT:Mr. Christopher T. Waites

A/E ADDRESS: Street/PO Box:1226 Yeamans Hall Road

City: Hanahan

State: SC ZIP: 29410-

EMAIL: chrisw@adcengineering.com

TELEPHONE: 843-566-0161

FAX: 843-566-0162

All questions & correspondence concerning this Invitation shall be addressed to the A/E.

BIDDING DOCUMENTS/PLANS MAY BE OBTAINED FROM: <http://purchasing.sc.edu/> "Facilities/Construction Solicitations and Awards"

PLAN DEPOSIT AMOUNT: \$0.00 **IS DEPOSIT REFUNDABLE:** Yes No

Only those Bidding Documents/Plans obtained from the above listed source(s) are official. Bidders rely on copies of Bidding Documents/Plans obtained from any other source at their own risk.

BIDDING DOCUMENTS/PLANS ARE ALSO ON FILE FOR VIEWING PURPOSES ONLY AT *(list name and location for each plan room or other entity):*

PRE-BID CONFERENCE? Yes No **MANDATORY ATTENDANCE?** Yes No

DATE: 3/5/2013

TIME: 1 PM

PLACE: FMC Conf Room-155 America Way Spartanburg, SC 29303

AGENCY: University of South Carolina

NAME OF AGENCY PROCUREMENT OFFICER: Kay Keisler

ADDRESS: Street/PO Box:743 Greene Street

City: Columbia

State: SC ZIP: 29208-

EMAIL: kkeisler@fmc.sc.edu

TELEPHONE: 803-777-5812

FAX: 803-777-8739

BID CLOSING DATE: 3/19/2013 **TIME:** 4 PM **LOCATION:** FMC Conf Room-155 America Way Spartanburg, SC 29303

BID DELIVERY ADDRESSES:

HAND-DELIVERY:

Attn: Mr. Fred Scott

USC Upstate

155 American Way

Spartanburg, SC 29203

MAIL SERVICE:

Attn: Mr. Fred Scott

USC Upstate

800 University Way

Spartanburg, SC 29303

IS PROJECT WITHIN AGENCY CONSTRUCTION CERTIFICATION? *(Agency MUST check one)* Yes No

SE-310
REQUEST FOR ADVERTISEMENT

2011 Edition
Rev. 7/20/2011

APPROVED BY (*Office of State Engineer*): _____

DATE: _____

AIA DOCUMENT A701

Instruction to Bidders

**Original AIA Document on file at the office
Of Construction Services
743 Greene Street, Columbia, SC**

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

OWNER: University of South Carolina**PROJECT NUMBER:** H34-9543-JM-A**PROJECT NAME:** Upstate CASB Roof Replacement**PROJECT LOCATION:** USC Upstate**PROCUREMENT OFFICER:** Kay Keisler**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 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 Intent to Award Notice (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.

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

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.

(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—

- (i) Those prices;
- (ii) The intention to submit an bid; or
- (iii) 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 an 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)(i) 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)(i), the term "principals" means the person(s) in the bidder's organization responsible for determining the prices offered in this bid];

(ii) As an authorized agent, does certify that the principals referenced in subdivision (b)(2)(i) 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

(iii) 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-

- (i) Bidder and/or any of its Principals-

(A) Are not presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any state or federal agency;

(B) 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

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

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

(C) 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)(i)(B) of this provision.

(ii) 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), Bid 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.

(d) 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 an Bidder is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) 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

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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. 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.

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.

OSE FORM 00201**STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS****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. Useful information may be available at: http://www.scemd.org/scgovweb/weather_alert.html

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.

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 may 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 list only the 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.

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

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

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-Authority 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-responsible

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.*

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.”*

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

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 (FORM NUMBER I-312) LOCATED AT:
<http://www.sctax.org/Forms+and+Instructions/withholding/default.htm>.

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

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

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: Receptionist Area

Building Where Posted: Facilities Management Center

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

WEB site address (if applicable): <http://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,

(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.

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

Bidder's 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.

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STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

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

NONE

END OF DOCUMENT

NOTE: AIA DOCUMENT A310

CONTRACTOR TO PROVIDE

BID BOND

In the form of

AIA A310

**SE-330 – LUMP SUM BID
BID FORM**

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

BID SUBMITTED BY: _____
(Bidder's Name)

BID SUBMITTED TO: University of South Carolina
(Owner's Name)

FOR PROJECT: PROJECT NAME Upstate CASB Roof Replacement
PROJECT NUMBER H34-9543-JM-A

OFFER

§ 1. In response to the Invitation for Construction Bids 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 11-32-3030(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:

ADDENDUM No: _____

§ 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):* Base Bid work includes total removal of the existing low sloped roofing systems down to the structural deck for approximately 200 squares of roof and repairs to the existing slate roofing system. Roof replacement includes minor deck repairs, rough carpentry, roof insulation, including taper, and a three-ply and modified cap sheet roof system. All associated sheet metal components and accessories are included. Removal of minor, non-friable asbestos containing roof materials is included. _____,

_____, which sum is hereafter called the Base Bid.

(Bidder - insert Base Bid Amount on line above)

**SE-330 – LUMP SUM BID
BID FORM**

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

ALTERNATE # 1 (Brief Description): N/A

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): N/A

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): N/A

ADD TO or DEDUCT FROM BASE BID: _____

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

**SE-330 – LUMP SUM BID
 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 Specialty work listed:

SUBCONTRACTOR SPECIALTY By License Classification and/or Subclassification (Completed by Owner)	SUBCONTRACTOR'S PRIME CONTRACTOR'S NAME (Must be completed by Bidder) BASE BID	SUBCONTRACTOR'S PRIME CONTRACTOR'S SC LICENSE NUMBER
N/A		
ALTERNATE 1		
N/A		
ALTERNATE 2		
N/A		
ALTERNATE 3		
N/A		

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.

INSTRUCTIONS FOR SUBCONTRACTOR LISTING

1. Section 7 of the Bid Form sets forth a list of subcontractor specialties for which bidder is required to identify by name the subcontractor(s) Bidder will use to perform the work of each listed specialty. Bidder must identify only the subcontractor(s) who will perform the work and no others.
2. 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. 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) are not subcontractors and Bidder should not insert their names in the spaces provided on the bid form. Likewise, Bidder should not insert the names of sub-subcontractors in the spaces provided on the bid form but only the names of those entities with which bidder will contract directly.
3. Bidder must only insert the names of subcontractors who are qualified to perform the work of the listed specialties as specified in the Bidding Documents and South Carolina Licensing Laws.
4. If under the terms of the Bidding Documents, Bidder is qualified to perform the work of a specialty listed 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. 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"**.
6. Bidder may not list subcontractors in the alternative nor in a form that may be reasonably construed at the time of bid opening as a listing in the alternative. A listing that requires subsequent explanation to determine whether or not it is a listing in the alternative 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 name of each entity listed for that specialty. Owner 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 Owner may reasonably interpret as a listing in the alternative.
7. If Bidder is awarded the contract, bidder must, except with the approval of the owner for good cause shown, use the listed entities to perform the work for which they are listed.
8. 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.
9. Bidder's failure to insert a name for each listed specialty subcontractor will render the Bid non-responsive.

**SE-330 – LUMP SUM BID
BID FORM**

§ 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 Bids, 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 **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 sum of **\$200.00** 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 sum 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 law 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
BID FORM**

BIDDER'S TAXPAYER IDENTIFICATION

FEDERAL EMPLOYER'S IDENTIFICATION NUMBER: _____

OR

SOCIAL SECURITY NUMBER: _____

CONTRACTOR'S CLASSIFICATIONS AND SUBCLASSIFICATIONS WITH LIMITATIONS

Classification(s) & Limits: _____

Subclassification(s) & Limits: _____

SC Contractor's License Number(s): _____

BY SIGNING THIS BID, THE PERSON SIGNING REAFFIRMS ALL REPRESENTATIONS AND CERTIFICATIONS MADE BY BOTH THE PERSON SIGNING AND THE BIDDER, INCLUDING WITHOUT LIMITATION, THOSE APPEARING IN ARTICLE 2 OF THE INSTRUCTIONS TO BIDDER. THE INVITATION FOR BIDS, AS DEFINED IN THE INSTRUCTIONS TO BIDDERS, IS EXPRESSLY INCORPORATE BY REFERENCE.

SIGNATURE

BIDDER'S LEGAL NAME: _____

ADDRESS: _____

BY: _____
(Signature)

DATE: _____

TITLE: _____

TELEPHONE: _____

EMAIL: _____

Unit Prices Attachment

Upstate CASB Roof Replacement
Owner Project Number: H34-9543-JM-A

BIDDER offers for the Owner’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 Owner, including those for materials, labor, equipment, tools of trades and labor, fees, taxes, insurance, bonding, overhead, profit, etc. The Owner reserves the right to include or not include any of the following **UNIT PRICES** in the Contract and to negotiate the **UNIT PRICES** with **BIDDER**.

No.	Item	Base Bid Qty	Unit of Measure	ADD Cost per Unit	DEDUCT Cost per Unit
1.	LWIC/Gypsum Deck Repairs	1000	SF		
2.	2 x 4	150	LF		
3.	2 x 6	150	LF		
4.	Roof Drain	2	EA		

Note: Please provide an “Add” and “Deduct” price per unit.

AIA DOCUMENT A101

**Standard Form of Agreement Between
Owner and Contractor**

**Original AIA Document on file at the office
Of Construction Services
743 Greene Street, Columbia, SC**

OSE FORM 00501

STANDARD MODIFICATIONS TO AGREEMENT BETWEEN OWNER AND CONTRACTOR

OWNER: University of South Carolina

PROJECT NUMBER: H34-9543-JM-A

PROJECT NAME: Upstate CASB Roof Replacement

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 shall be measured from the Date of Commencement as provided in Section 9(a) of the Bid Form (SE-330) for this Project. 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%).”

OSE FORM 00501
STANDARD MODIFICATIONS TO AGREEMENT BETWEEN
OWNER AND CONTRACTOR

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.”*

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 G. Derrick

Title: Project Manager

Address: 743 Greene Street, Columbia, SC 29208

Telephone: 803-777-5811 **FAX:** 803-777-8739

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: TBD

Title: _____

Address: _____

Telephone: _____ **FAX:** _____

Email: _____

OSE FORM 00501
STANDARD MODIFICATIONS TO AGREEMENT BETWEEN
OWNER AND CONTRACTOR

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: TBD
Title: _____
Address: _____
Telephone: _____ FAX: _____
Email: _____

2.14. *Add the following Section 8.6.1:*

8.6.1 The Architect's representative:

Name: Mr. Christopher T. Waites
Title: Project Manager
Address: 1226 Yeamans Hall Road, Hanahan, SC 29410
Telephone: 843-566-0161 FAX: 843-566-0162
Email: chrisw@adcengineering.com

2.15. *In Section 9.1.7, Sub-Section 2, list the following documents in the space provided for listing documents:*

Invitation for Construction Bids (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)
Certificate of procurement authority issued by the SC Budget & Control Board

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

END OF DOCUMENT

AIA DOCUMENT A201

General Conditions of the Contract for Construction

**Original AIA Document on file at the office
Of Construction Services
743 Greene Street, Columbia, SC**

OSE FORM 00811

STANDARD SUPPLEMENTARY CONDITIONS

OWNER: University of South Carolina

PROJECT NUMBER: H34-9543-JM-A

PROJECT NAME: Upstate CASB Roof Replacement

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.

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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..

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.

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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.

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

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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 constructions 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.

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."*

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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 whom 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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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 is Section 5.2.3.

3.44 *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

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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 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.

3.45 *Delete the last sentence of Section 5.4.1.*

3.46 *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.

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

3.48 *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.

3.49 *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-480 "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;

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- .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.

3.50 *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.

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 expenditures 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.

3.51 *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.

3.52 *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:

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- .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.

3.53 *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.

3.54 *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:

- .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.

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3.55 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.

3.56 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.

3.57 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.

3.58 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 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.

3.59 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.

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3.60 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.

3.61 *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,”

3.62 *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.

3.63 *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

3.64 *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.

3.65 *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 of same have been delivered to the Owner.

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

3.67 *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

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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.

3.68 *In the second sentence of Section 9.8.5, delete the words "and consent of surety, if any."*

3.69 *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."*

3.70 *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.

3.71 *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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3.72 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.

3.73 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.

3.74 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.

3.75 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.

3.76 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.

3.77 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.

3.78 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

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

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3.80 *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.

3.81 *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.

(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.

3.82 *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

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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.

3.83 *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.

3.84 *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.

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

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

3.87 *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.

3.88 *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.

3.89 *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.

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

3.91 *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.

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3.92 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.

3.93 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.

3.94 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.

3.95 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..

3.96 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.

3.97 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.

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3.98 *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.

3.99 *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.

3.100 *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.*

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

unless otherwise provided in the Contract Documents.

3.102 *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.

3.103 *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.

3.104 *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.

3.105 *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.

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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.

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

Unless expressly provided otherwise,

3.107 *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
- 15.4 Service of Process

3.108 *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.

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

3.110 *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)

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)

3.111 *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

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- .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

3.112 *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.

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

3.114 *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.

3.115 *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.*

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

3.117 *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.

3.118 *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.

3.119 *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.

3.120 *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;

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- .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.

3.121 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.

3.122 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.

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.

3.123 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.

3.124 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.

3.125 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.

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3.126 *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.

3.127 *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) calendar 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. 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.

3.128 *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 waived 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. 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).

3.129 *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)

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attorney's fees, (vi) any interest; (vii) unamortized equipment costs; and, (viii) losses incurred by subcontractors for the types of damages the Contractor has waived as against the Owner. This mutual waiver is not applicable to amounts due or obligations under Section 3.18 (Indemnification).

3.130 *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.*

3.131 *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.

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.

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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.

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.

3.132 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)*
- Building Inspections are required and are part of the Contract Sum. 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 to be by University of South Carolina.

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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)*

See Section 01 77 00, Contract Close-Out.

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)*

See Section 01 33 00, Submittals.

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)*

See Section 01 11 00, Summary of Work and Section 01 50 00, Construction Facilities and Temporary Controls.

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)*

Substantial Completion is the stage in the progress of the project when all of the following conditions are met: all roofing/waterproofing/exterior wall systems are in place in accordance with the Contract Documents and are properly protected, Owner has complete use of the site and the facility without disruption or hindrance and no leaks or damages to the roofing/waterproofing/exterior wall or facility systems exist.

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 available.
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 material 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, Contractor 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.

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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 1 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 JOB SITES 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. The contractor will comply with all regulations set forth by OSHA and SCDHEC. Contractor must also adhere to USC's internal policies and procedures (available by request). As requested, the contractor will submit all Safety Programs and Certificates of Insurance to the University for review.
15. 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.
16. 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 3/4" minimum plywood base shall be placed over areas impacted. For single loads over 9,000 lbs., two layers of 3/4" plywood is required.
17. For projects requiring heavy loads to cross walks tree root zones or lawns. A construction entry road consisting of 10' X 16' oak logging mats on 12" coarse, chipped, hardwood base. Mulch and logging mats shall be supplemented throughout the project to keep

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matting structurally functional.

18. Any damage to existing landscaping (including lawn areas) will be remediated before final payment is made.
19. Orange safety fence to be provided by the contractor. (USC Arborist, Kevin Curtis may be contacted at 777-0033 or 315-0319)

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 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.

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 Street
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: Upstate CASB Roof Replacement
State Project Number: H34-9543-JM-A
Brief Description of Awarded Work, as found on the SE-330, Bid Form: See Bid Form and Unit Prices Attachment

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

Name: ADC Engineering, Inc.
Address: 1226 Yeamans Hall Road
Hanahan, SC 29410

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 _____ BOND NUMBER _____
(shall be no earlier than Date of Contract)

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)

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 and 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: University of South Carolina
Address: 743 Green Street
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

Project Name: Upstate CASB Roof Replacement
Project Number: H34-9543-JM-A
Brief Description of Awarded Work, as found on the SE-330, Bid Form: See Bid Form and Unit Prices Attachment

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

Name: ADC Engineering, Inc.
Address: 1226 Yeamans Hall Road
Hanahan, SC 29410

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_____, _____ BOND NUMBER _____
(shall be no earlier than Date of Contract)

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-357**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.

CONSTRUCTION CHANGE ORDER

Change Order No.:	
--------------------------	--

Agency: University of South Carolina
Project Number: Upstate CASB Roof Replacement
Project Name: H34-9543-JM-A

Contractor: _____
Contract Dated: _____ **For:** _____

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: -----	<input type="text"/>	
3. Contract Sum prior to this Change Order: -----		<input type="text" value="\$0.00"/>
4. Amount of this Change Order: -----	<input type="text"/>	
5. New Contract Sum, including this Change Order: -----		<input type="text" value="\$0.00"/>

Adjustments in Contract Time:

1. Original Substantial Completion Date: -----		<input type="text"/>
2. Sum of previously approved increases and decreases: -----	<input type="text"/> Days	
3. Changes in Days for this Change Order: -----	<input type="text"/> Days	
4. New Substantial Completion Date: -----		<input type="text"/>

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 Procurement Certification amount of _____
- Change is not within Agency Construction Procurement Certification amount

Office of the State Engineer Authorization for change not within Agency Construction Procurement Certification:

Signature of OSE Project Manager: _____
Date: _____

Project Name: Upstate CASB Roof Replacement

Project Number: H34-9543-JM-A-JM-A

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 a period of one (1) year from 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 wherefrom, at no cost to the Owner, provided; however, that the following are excluded from this guarantee;

Defects or failures resulting from abuse by 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 office of the Contracting Firm.

SWORN TO before me this _____ day of _____, 2____ (seal)

_____ State

My commission expires _____

TECHNICAL SPECIFICATIONS

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SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY

- A. The building will remain completely functional and fully protected at all times during the construction work.
- B. Base Bid work includes total removal of the existing low sloped roofing systems down to the structural deck for approximately 200 squares of roof and repairs to the existing slate roofing system. Roof replacement includes minor deck repairs, rough carpentry, roof insulation, including taper, and a three-ply and modified cap sheet roof system. All associated sheet metal components and accessories are included. Removal of minor, non-friable asbestos containing roof materials is included.
 - 1. Demolition of the existing roof system(s) down to the deck in accordance with Section 02 04 00, Cutting and Patching and Section 02 05 00, Demolition and Removal.
 - 2. Asbestos abatement of non-friable asbestos containing roofing materials (ACRM) in accordance with Section 02 82 16 Engineering Control of Asbestos Containing Material.
 - 3. Modifications and repairs to lightweight insulating concrete/gypsum in accordance with Section 03 52 00, Lightweight Insulating Concrete/Gypsum Deck Repair.
 - 4. Fabricate and install metal fabrications, ladders and ladder brackets in accordance with Section 05 55 00, Metal Fabrication.
 - 5. Rough carpentry in accordance with Section 06 10 00, Rough Carpentry.
 - 6. Roof insulation in accordance Section 07 22 00, Thermal Roof Insulation.
 - 7. Repairs to existing slate roofing system in accordance with Section 07 31 09, Slate Roofing Repair.
 - 8. Roof membrane, membrane flashings, associated components and accessories in accordance with Section 07 53 07, Modified Bitumen Cap Sheet and Felt Roofing System.
 - 9. Sheet metal, components and accessories per Section 07 60 00, Sheet Metal.
 - 10. Replacement of sealant systems from the roofing and sheet metal in accordance with Section 07 92 00, Sealants for Roofing and Sheet Metal.
- C. Unit Prices and Allowances are included in accordance with Section 01 21 10, Unit Prices and Allowances and are to be included in the Base Bid.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. The attention of the contractor of this Section is directed to the INSTRUCTIONS TO BIDDERS concerning substitution of materials and equipment.
 - 1. Submit proposed substitution of products or systems on the form provided in Section 01 60 01, Substitution Request Form.

1.03 CONTRACT METHOD

- A. Construct the Work under a single lump sum contract.
- B. Unit prices for indicated items are required as listed on the Unit Prices Attachment.

1.04 WORK BY OTHERS

- A. Work of the Project executed prior to start of Work of this Contract, and which is specifically excluded from this Contract:
 - 1. Not applicable.

1.05 CONTRACTOR USE OF PREMISES

- A. Limit use of premises to specific work, storage, and access.
- B. Access to site/roof shall be from the exterior using Contractor's means and methods. No interior access is permitted unless directly related to the work.
- C. Contractor Layout Space:
 - 1. Limited and only at locations directed and approved by Owner.
 - 2. Only areas adjacent to the building may be used.
 - 3. Do not allow traffic or equipment storage outside of the approved areas.
 - 4. No access to inside of building is permitted without prior approval.
- D. MSDS sheets are required for all products/materials used for this project. Any products with strong or distinct odors must be identified prior to use and submitted to Consultant/Engineer for review and approval.
- E. Maintain safe access to, from and around building for occupants.
- F. Coordinate use of premises under direction of Owner.

- G. Assume full responsibility for protection and safekeeping of materials, equipment and products under this Contract.
- H. Obtain and pay for use of additional storage of work areas needed for operations under this Contract.
 - 1. All materials and equipment on site will be stored in a trailer, and secured each night.
 - 2. Secure access to ladders and scaffolding at the end of each day.
- I. Daily clean-up and general safety are critical to building function and shall be primary contractor's priority.
- J. Secure motorized equipment and render inoperable during non-working hours.
- K. Adhere to Owner's security, badging and access requirements.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 11 00

SECTION 01 21 10

UNIT PRICES AND ALLOWANCES

PART 1 - GENERAL

1.01 SUMMARY

A. Unit Prices

1. Provide unit prices for the specific quantities as listed on the Unit Prices Attachment. A lump sum cost for the quantity amount is to be included in the Base Bid unless otherwise noted.
 - a. A single unit price will be provided for each item, to be used as an “add” or “deduct,” based on actual field conditions.
2. The exact locations of these repairs are not defined in the Construction Documents. These areas will be identified during the demolition/construction process.
3. Maintain a daily log of all unit price quantities used based on contract requirements.
4. Notify Owner in writing when 80% of contract quantity is used for each unit price item.
5. Owner is not responsible for quantities which exceed 80% unless Owner is notified in writing, prior to exceeding these quantities, and contractor receives written approval to proceed.
6. Provide photographs or videotape documentation of actual quantities used.
7. Locate quantities, and show their locations on elevations or plan view drawings. Provide corresponding photographic or videotape documentation.
8. Provide actual used quantities on each Application for Payment request.
9. Provide summary of unit prices “required” vs. “used” and above documentation when requested, and as part of Project Close-Out Requirements of Section 01 77 00, Contract Close-Out.

B. Allowances

1. In addition to the unit prices, provide an allowance as established for miscellaneous items to the scope of this work.
 - a. None.

2. Allowance shall cover the cost of prescribed items not specified in detail with the provision that variations between such amount and the finally determined cost of the prescribed items will be reflected in change orders appropriately adjusting the contract sum.
- C. The cost for a Unit Price or Allowance item shall include all equipment, material and labor, manufacturing, transportation, deliver, handling and installation including fees, taxes, insurance, bonding, overhead and profit.
- D. Base change order for unit prices and allowances solely on difference between actual quantity of work required and quantity of documented and approved work.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions and Supplementary Conditions of these specifications shall govern work under this Section.
- B. The attention of the Contractor and the Subcontractor of this Section is directed to the Instructions to Bidders concerning substitution of materials and equipment.
- C. Section 01 33 00: Submittals: Submission of Manufacturers' Instructions, Shop Drawings, Product Data, and Certificates.
- D. Section 01 77 00: Contract Close-Out.
- E. All technical specification sections.

1.03 COORDINATION

- A. Provide line item for each of these items on the Schedule of Values in accordance with Section 01 33 00, Submittals.
- B. Provide documentation of these items in accordance with Section 01 77 00, Contract Close-Out.
- C. Provide actual quantities used on each Application for Payment Request.

PART 2 - PRODUCTS

2.01 General Contract Unit Price Quantities

- A. As listed in the summary of each specification section and as indicated on the drawings, provide the Unit Prices as listed on the Unit Prices Attachment.

2.02 General Contract Allowances

- A. As listed in this specification section, provide the Allowances within the Bid.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 21 10

Unit Prices and Allowances
01 21 10-2

11338

SECTION 01 31 13

COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide coordination and notification with Owner and Third Party Inspection Services.
- B. See specific requirements in the USC Supplementary Conditions.
- C. Maintain safe, protected ingress/egress of all entrances at all times.
- D. Seven (7) days notice is required to Owner and Consultant/Engineer for any element or phase of work where Contractor's access equipment will be removed/relocated to ensure Owner and Consultant/Engineer have access to review and/or observe if requested.
- E. Seven (7) days notice to Owner and Consultant/Engineer and written approval is required for all items affecting function/use of building, including any shutdowns, interruptions in services, or disconnection of services.
 - 1. This includes any work at or around air intakes, louvers, vents or other mechanical equipment that can allow the odors/fumes/smells of work materials and/or equipment to enter the building.
- F. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
- G. Use only approved laydown and storage areas discussed in Pre-Construction Conference, unless otherwise discussed and specifically approved by Owner.
- H. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service such equipment.
- I. Coordinate space requirements and installation of mechanical and electrical work, which are indicated on Drawings. Coordinate routing for pipes and conduit as closely as possible with Owner. Place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- J. Coordinate Owner furnished equipment, materials and labor. Provide written notice to Owner, seven (7) days prior to work needed in schedule.

- K. In finished areas contractor should anticipate and verify if concealed pipes, ducts, and wiring within the construction exist except as indicated otherwise. Coordinate locations of fixtures and outlets with finish elements.
- L. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion.
- M. Coordinate access to site for correction of defective Work, and Work not in accordance with Construction Documents to minimize disruption of Owner's activities.
- N. Coordinate each manufacturer's site visit/inspection with Owner personnel at least three (3) days prior to the visit. Provide a complete copy of the field report from the manufacturer within three (3) days.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. The attention of the Contractor and the Subcontractor of this Section is directed to the Instructions to Bidders concerning substitution of materials and equipment.
- C. All sections of specifications and drawings required to accomplish the general work defined above.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 31 13

SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. Owner and consultant/engineer shall establish and schedule Pre-Construction Conference and all other meetings. The contractor shall coordinate and administer Pre-Construction Conference meeting, weekly progress meetings, and specially called meetings throughout progress of the work. Weekly meeting will include contractors, project manager, superintendent and applicable subcontractors.
 - 1. Prepare agenda for meetings.
 - 2. Distribute written notice of each meeting four (4) days in advance of meeting date.
 - 3. Make physical arrangements for meetings.
 - 4. Preside at meetings.
 - 5. Record minutes: Include all significant proceedings and decisions.
 - 6. Reproduce and distribute copies of minutes within three (3) days after each meeting.
- B. Representatives of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
- C. Consultant/Engineer may attend meetings to ascertain that work is expedited consistent with Construction Documents and construction schedules.
- D. Consultant/Engineer shall be notified of all such meetings, and be provided written summary of each.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. The attention of the contractor and the subcontractor of this section is directed to the Instructions to Bidders concerning substitution of materials and equipment.
- C. Section 01 33 00 - Submittals: Construction Schedules and Submittals.
- D. Section 01 77 00 - Contract Close-Out: Project Record Documents.

1.03 PRE-CONSTRUCTION CONFERENCE MEETING

- A. Schedule after submittals have been provided and approved, before any construction begins.
- B. Location: At Project Site.
- C. Consultant/Engineer will administer Pre-Construction Conference for execution of Owner-Contractor Agreement and exchange of preliminary submittals.
- D. Attendance:
 - 1. Owner's Representative.
 - 2. Consultant/Engineer.
 - 3. OSE Project Manager (if applicable).
 - 4. Resident Project Representative.
 - 5. Contractor's Superintendent
 - 6. Major Subcontractors.
 - 7. Major Suppliers
 - 8. Others as Appropriate.
- E. Suggested Agenda:
 - 1. Distribution and discussion of:
 - a. List of major subcontractors and suppliers
 - b. Projected Construction Schedules.
 - 2. Review of project documentation of existing conditions submittal.
 - 3. Critical work sequencing.
 - 4. Major deliveries and priorities
 - 5. Project Coordination
 - a. Designation of responsible personnel.
 - 6. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.

- c. Submittals.
- d. Change Orders.
- e. Applications for Payment.
- f. Adequacy of distribution of Construction Documents.
- g. Procedures for maintaining Record Documents.
- h. Use of premises:
 - 1) Office work and storage lay down areas.
 - 2) Owner's requirements.
 - 3) Interior access.
- i. Construction facilities, controls and construction aids.
- j. Temporary utilities.
- k. Safety and first-aid procedures.
- l. Security procedures.

1.04 PROGRESS MEETINGS

- A. Schedule and administer Project meetings throughout progress of the work at weekly intervals, called meetings, and pre-installation conferences.
- B. Location of Meetings: At Project Site.
- C. Attendance:
 - 1. Consultant/Engineer as needed.
 - 2. Subcontractors as appropriate to agenda.
 - 3. Suppliers as appropriate to agenda.
 - 4. Others.
- D. Suggested Agenda:
 - 1. Review, approval of minutes of previous meeting.
 - 2. Review of work progress since previous meeting.
 - 3. Field observation, problems, conflicts.

4. Problems, which impede Construction Schedule.
5. Review of off-site fabrication, delivery schedules.
6. Corrective measures and procedures to regain projected schedule.
7. Revisions to Construction Schedule.
8. Plan progress schedule during succeeding work period.
9. Coordination of schedules.
10. Review submittal schedules; expedite as required.
11. Maintenance of quality standards.
12. Review proposed changes for:
 - a. Effect on construction schedule and on completion date.
 - b. Effect on other contracts of project.
13. Pending changes and substitutions.
14. Other business.

1.05 INSTALLATION MEETINGS

- A. When required in individual specification section, convene a pre-installation conference at work site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Consultant/Engineer seven (7) days in advance of meeting date.
- D. Prepare agenda, preside at conference, record minutes, and distribute copies within three (3) days after the conference to participants, with two copies to Consultant/Engineer.
- E. Review conditions of installation, preparation and installation procedures, and coordination with related work.
- F. Required mock-up submittals shall be received at least 7 days prior to meeting and shall be completed for the pre-installation meeting.

1.06 MANUFACTURERS SITE VISITS

- A. Owner and Consultant/Engineer shall be notified at least three (3) days in advance of any manufacturers site visit.
- B. Owner and Consultant/Engineer shall be provided a complete copy of report/notes within three (3) days of visit.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 31 19

SECTION 01 32 03

PROJECT SCHEDULES

PART 1 - GENERAL

1.01 SUMMARY

- A. Prepare a critical path method (CPM) schedule that includes submittal review, any required engineering, procurement of materials, construction and agency required third party inspection testing activities or manufacturer milestone or other inspections. The CPM schedule shall cover the time from Contract Award/Notice to Proceed to the Contract completion date. The CPM schedule shall incorporate labor, equipment and quantity resource data. The principles and definitions of the terms used herein shall be as set forth in Associated General Contractors of America Construction Planning and Scheduling Manual, Second Edition.
- B. Provide email notification each Friday for the following week proposing work schedule. This is in addition to the coordination requirements of Section 01 31 13, Coordination. Attach plan view of facility to email for clarification of work areas.
- C. Provide schedule in accordance with Section 01 33 00, Submittals.
- D. Contractor shall request, from the Owner, a calendar of all scheduled events which will/may affect the overall project schedule and sequence of work.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. Section 01 31 13: Coordination
- C. Section 01 33 00: Submittals

1.03 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced, and to provide any clarifications for issues not covered within this specification.
- B. ASSOCIATED GENERAL CONTRACTORS OF AMERICA (AGCA)
 - 1. Construction Planning and Scheduling Manual, Second Edition, June 2004.

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals.

B. Project Schedule

C. Weekly Updates

1.05 NETWORK SYSTEM FORMAT

A. The system shall adhere to Section 01 33 00, Submittals with time scaled diagrams and accompanying reports. Facilities with varying completion dates shall be identified by separate sub networks interconnected with the basic diagram and/or specifically coded.

B. Schedule Diagrams

1. Show activity number, description, early dates, float, and all relationships, i.e. logic ties, resources and cost. Show the sequence, order, and interdependence of activities in which the work is to be accomplished. The basic concept of a network analysis diagram will be followed to show how the start of a given activity is dependent on the physical completion of preceding activities and how its physical completion restricts or restrains the start of following activities. A minimum of 30 calendar days (22 work days) duration, or more if so specified, shall be allowed for Owner processing, approval and return of submittals, samples and shop drawings where Owner approval is required.
2. In addition to construction activities, detailed network activities shall include the submittals, procurement, and Owner activities impacting progress.
3. Submittal activities shall include review and approval of all submittals.
4. Procurement activities shall include all materials and equipment, receipt of materials with estimated procurement costs of major items for which payment of materials will be requested in advance of installation, fabrication of special material and equipment, and their installation and testing.
5. Show activities of the Owner that affect progress and contract-required dates for completion of all or parts of the work. Show activities indicating Owner furnished materials and equipment utilizing delivery dates indicated in the clause titled "Owner Furnished Property" of the Contract Clauses.

1.06 SCHEDULE DIAGRAMS

A. The schedule data shall conform to the following criteria:

1. All activities shall use a standard calendar of 5 workdays per week, Monday through Friday. Show Contractor defined holidays and Federal holidays as non-workdays. Activities using any other calendar shall be highlighted for the Consultant/Engineer's approval.

2. Each schedule activity shall be cost and resource loaded to include each type of trade or labor, e.g., carpenters, plumbers, electricians, etc. Activity duration shall be in workdays. All activities shall indicate the average number of workers per day planned during execution of the activity.
3. At a minimum, each schedule activity shall contain codes by:
 - a. Responsibility; include but not be limited to Owner Furnished Materials, Contractor/Subcontractor, Supplier/Vendor, Consultant, etc.
 - b. Location; such as, building specific, phases of construction and/or areas within a building.
 - c. Mock-up and approval shall be included within schedule.
 - d. Request of the Consultant/Engineer; additional codes may be required such as phases, buildings, areas within a building.
 - e. Key milestones as identified by contract or furnished by the Consultant/Engineer; Proposed Change (PC) Numbers, Modification Numbers, Requests for Information (RFI's), and/or Bid Items as requested by the Consultant/Engineer.
 - f. All activities must be less than or equal to 7 work days and \$10,000, unless approved to be greater by the Consultant/Engineer.
 - g. Detailed description of each activity (i.e. asbestos removal, mobilization, roof demolition and installation sheet metal, sealants, etc.). In each activity, give quantity and unit of measure so that the amount of work the activity involves is clearly communicated.
 - h. Only two (2) open-ended activities are allowed; the first and last activities.
 - i. Three phases of control (Preparatory, Initial, and Follow-up) must be included in the schedule for each activity identified as a Definable Feature of Work by the Consultant/Engineer (See Quality Control Plan).
 - j. Out of sequence progress if applicable shall be handled through Retained Logic, not the Default Option of Progress Override.
 - k. Progress shall be calculated based on remaining duration (RD), not percent complete.
 - l. All changes to activities except jointly coordinated progress updates (i.e., duration changes, logic revisions, imposition of constraints, etc.) shall be recorded with a note in the activity log field. The log shall

include, as a minimum, the date and reason for the change, as well as the Owner representative granting approval for the change.

- m. The use of resource leveling, either manual or automatic, is discouraged. Any resource leveling must be specifically highlighted for the Consultant/Engineer's approval.
- n. The use of start-to-start or finish-to-finish and lags is discouraged. Any relationships other than finish-to-start must be specifically highlighted for Consultant/Engineer approval and recorded with an explanatory note in the activity log field.

1.07 SUBMISSION AND APPROVAL

A. Preliminary Meeting

- 1. If requested by the Consultant/Engineer, participate in a preliminary meeting to discuss the proposed schedule and requirements of this section prior to submission of the network.

1.08 REVIEW AND EVALUATION

- A. The Contractor shall participate in a meeting to discuss review and evaluation of the proposed project schedule by the Consultant/Engineer. Revisions necessary as a result of this review shall be resubmitted for approval of the Consultant/Engineer within 15 calendar days after the conference. The approved schedule shall then be the schedule to be used by the Contractor for planning, organizing, and directing the work, reporting progress, and requesting payment for work accomplished. Approval of the project schedule is required prior to the start of construction.

1.09 CHANGES

- A. If changes in the Contractor's means and methods are necessary, apart from contract modifications (sequencing/logic, duration, further refining of schedule activities and logic, etc.), the Consultant/Engineer shall be notified in writing stating the reasons for the change.

1.10 APPROVED SCHEDULE

- A. Once the Consultant/Engineer has approved the completed schedule, the Contractor shall within 15 calendar days furnish the approved schedule.

1.11 PROGRESS MEETINGS

- A. Progress meetings to discuss progress and payment shall include a weekly onsite meeting or other regular intervals as required by the Owner. During the meeting the Contractor shall describe proposed revisions and adjustments required to reflect the current status of the project for the Consultant/Engineer's approval.

1.12 CONTRACT MODIFICATION

- A. When a contract modification to the work is required, submit the proposed revisions to the schedule.

1.13 TIME EXTENSIONS

- A. Time extensions will not be considered for contract modification proposals that do not include full documentation for the schedule change. Once the Consultant/Engineer has approved a change, the specific activities and the overall schedule must be updated.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 32 03

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

- A. Procedures
- B. Construction Progress Schedules
- C. Schedule of Values
- D. Project Documentation of Existing Conditions
- E. Shop Drawings
- F. Product Data
 - 1. Including sample warranties for all required warranties
- G. Manufacturer's Instructions/Certificates
- H. Samples
- I. Mock-Ups
- J. MSDS Sheets

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. The attention of the Contractor and Subcontractors of this project is directed to the Instruction to Bidders concerning substitution of materials and equipment.
- C. Section 01 11 00: Summary of Work
- D. Section 01 33 02: Required Submittal List
- E. Section 01 77 00: Contract Close-Out: Close-Out Submittals

1.03 PROCEDURES

- A. Deliver submittals to Consultant/Engineer at address listed on cover of Project Manual. Use the Required Submittal List in Section 01 33 02, Required Submittal List as a Table of Contents for the Submittal Package.

- B. Provide all required submittals bound together as a single package in sequential order in accordance with the Required Submittal List. Any submittal packages not adhering to this requirement will be returned to the Contractor.
- C. Submit the number of copies, which Contractor requires, plus two copies, which will be retained by Consultant/Engineer.
- D. Transmit each item required under the attached submittal list. The Required Submittal List shall be used as the Table of Contents for the submission package. Identify Project, Contractor, subcontractor, major supplier and manufacturer; identify pertinent Drawing sheet and detail number, and Specification Section number, as appropriate.
 - 1. Clearly identify in writing any variations or deviations from Construction Documents. Submit required product or system simultaneously with request, to ensure no time is lost if deviation/variation is not approved.
 - 2. Indicate if submittal is a re-submittal.
 - 3. Submit initial progress schedules and schedule of values in duplicate within ten (10) days after date established in Notice to Proceed. Consultant/ Engineer will review and return schedules to Contractor within ten (10) days. If required, revise and resubmit within seven (7) days.
- E. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.
- F. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified: all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto, all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and all information relative to CONTRACTOR's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.
- G. SUBMIT ALL SHOP DRAWINGS, PRODUCT DATA AND SAMPLES WITHIN FOURTEEN (14) DAYS OF NOTICE TO PROCEED. Consultant/Engineer will review and return submittals to Contractor within ten (10) days. Revise and resubmit as required, within seven (7) days, identifying changes made since previous submittal.
 - 1. Notify Consultant/Engineer in writing, at time of submission, of any deviations in submittals from requirements of the Construction Documents.
 - 2. Begin no fabrication or work, which requires submittals until return of submittals stamped "No Exceptions Taken" by Consultant/Engineer.

- H. Distribute copies of reviewed submittals stamped "No Exceptions Taken" by Consultant/Engineer to the Owner, job site file, subcontractors, and other concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

1.04 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit a schedule of intended construction sequence.
 - 1. Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities. Show projected percentage of completion for each item of Work as of time of each Application for Progress Payment.
 - 2. Show submittal dates required for shop drawings, product data, and samples, and product delivery dates, including those furnished by Owner and those under Allowances.
 - 3. Show submittal dates required for shop drawings, product data, and samples, and product delivery dates, including those furnished by Owner.
 - 4. Incorporate any selected alternates by Owner as line items.
 - 5. Provide updated schedule for review on a weekly basis.
 - 6. Submit revised schedules with each Application for Payment, reflecting changes since previous submittal and include any inclement weather or lost days.
- B. Adhere to Section 01 32 03, Project Schedule.

1.05 SCHEDULE OF VALUES

- A. Submit typed schedule on 8 ½ x 11-inch paper; Contractor's standard form, AIA G703 or media-driven printout will be considered on request.
 - 1. Identify schedule with:
 - a. Title of Project and Location.
 - b. Owner and Project Number.
 - c. Name and Address of Contractor.
 - d. Contract Designation.
 - e. Date of Submittal.

2. Format:
 - a. Table of Contents of this Project Manual.
 - b. Identify each line item with number and title of the major Specification Sections.
 - c. Include in each line item a directly proportional amount of Contractor's overhead and profit.
 - d. Revise schedule to list change orders, for each application for payment.
 - e. Include all alternates, allowances and unit price items as individual line items on the schedule of values.
 - f. Value of "Close-Out Documents" (to be no less than \$500.00).

1.06 PROJECT DOCUMENTATION OF EXISTING CONDITIONS

- A. Contractor shall submit a CD or flash drive of photographs/videos documenting all existing conditions.
 1. Interior (leaks, stains, damaged ceiling tiles, paint, carpet, etc.).
 2. Exterior (landscaping, asphalt pavements, concrete surfaces, exterior wall conditions, etc.).
- B. It is the Contractor's responsibility to document existing conditions prior to commencing work. The burden of proof on prior conditions shall be the Contractor's.

1.07 SHOP DRAWINGS

- A. All details will be in accordance with contract drawings.
- B. Submit any clarifications or requested deviations in triplicate.

1.08 PROJECT DATA

- A. Mark each copy to identify applicable products, models, options, and other data; supplement manufacturer's standard data to provide information unique to the Work.
- B. Ensure that the product data is current information from the manufacturer.
- C. Provide sample warranties for all required warranties.

1.09 MANUFACTURER'S INSTRUCTIONS/CERTIFICATES

- A. When required in individual Specification Section, submit manufacturer's printed instructions for delivery, storage, assembly, installation, adjusting, and finishing in quantities specified for product data.

- B. Manufacturer's instructions and requirements shall not take precedence of contract specifications and drawings unless specific approval is requested and approved prior to actual construction.

1.10 SAMPLES

- A. Submit full range of manufacturer's standard colors, textures, and patterns for Consultant/Engineer's selection and approval by the Owner.
- B. Submit samples to illustrate functional characteristics of the product, with integral parts and attachment devices.
- C. Coordinate submittal of different categories for interfacing work.
- D. Include identification on each sample, giving full information.
- E. Submit the number of samples specified in each respective Specification section; Consultant/ Engineer will retain one.
- F. Reviewed samples, which may be used in the Work, are indicated in the Specification Section.

1.11 MOCK-UPS

- A. Contractor shall complete an initial repair area for each major scope item for review and approval of Consultant/Engineer and Owner.
- B. Location shall be pre-selected and approved by Consultant/Engineer and Owner.
- C. Mock-up shall be of an actual condition(s) on the facility and shall indicate and show materials, methods and quality of application.
- D. Mock-up shall also be reviewed for acceptability of the aesthetic conditions of the work.

1.12 Material Safety Data Sheets (MSDS):

- A. Submit Material Safety Data Sheets with each specification section and include with Safety Plan in accordance with Section 01 52 05, Safety Requirements.
- B. Provide Material Safety Data Sheets for all materials being installed or used.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 33 00

Submittals
01 33 00-5

11338



AIA Document G702™ - 1992

Application and Certificate for Payment

TO OWNER: University of South Carolina - Upstate
800 University Way
Spartanburg, SC 29303

PROJECT: Upstate CASB Roof Replacement

APPLICATION NO: _____

PERIOD TO: _____

CONTRACTOR: ADC Engineering, Inc.
1226 Yeamans Hall Road
Hanahan, SC 29410

VIA ARCHITECT: _____

CONTRACT FOR: _____

CONTRACT DATE: _____

PROJECT NOS: Owner Project Number: H34-9543-JM-A
ADC Project Number: 11338

Distribution to:
OWNER: ARCHITECT:
CONTRACTOR: FIELD:
OTHER:

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM \$ 0.00
2. Net change by Change Orders \$ 0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2) \$ 0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) \$ 0.00
5. RETAINAGE:
 - a. 0 % of Completed Work (Column D + E on G703) \$ 0.00
 - b. 0 % of Stored Material (Column F on G703) \$ 0.00

Total Retainage (Lines 5a + 5b or Total in Column I of G703) \$ 0.00

6. TOTAL EARNED LESS RETAINAGE \$ 0.00
(Line 4 Less Line 5 Total)

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT \$ 0.00
(Line 6 from prior Certificate)

8. CURRENT PAYMENT DUE \$ 0.00

9. BALANCE TO FINISH, INCLUDING RETAINAGE
(Line 3 less Line 6) \$ 0.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$ 0.00	\$ 0.00
Total approved this Month	\$ 0.00	\$ 0.00
TOTALS	\$ 0.00	\$ 0.00
NET CHANGES by Change Order	\$ 0.00	\$ 0.00

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR: _____
By: _____ Date: _____
State of: _____
County of: _____
Subscribed and sworn to before me this _____ day of _____
Notary Public: _____
My Commission expires: _____

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED \$ 0.00
(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT: _____
By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract



AIA® Document G703™ - 1992

Continuation Sheet

AIA Document G702, APPLICATION AND CERTIFICATION FOR PAYMENT, containing Contractor's signed certification is attached.
 In tabulations below, amounts are stated to the nearest dollar.
 Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO: H34-9543-JM-A
ADC Project Number: 11338

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		E THIS PERIOD	F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)	H BALANCE TO FINISH (C - G)	I RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD						
GRAND TOTAL										

required submittals list

Project Title: Upstate CASB Roof Replacement
Owner Project No.: H34-9543-JM-A
ADC Project No.: 11338
Reviewer(s): _____ Date: _____
ADC Engineering, Inc.

Submittals are to be forwarded as a single package submission and in accordance with Section 01 33 00, Submittals, including:

- 01 32 03 **Project Schedules**
 - 1.04 B. Project Schedule
 - C. Weekly Updates

- 01 33 00 **Submittals**
 - 1.04 A. Construction Progress Schedules
 - 1.05 A. Schedule of Values
 - 1.06 A. Project Documentation of Existing Conditions

- 01 52 05 **Safety Requirements**
 - 1.05 B. Plans
 - B1. Accident Prevention Plan
 - B2. Health and Safety Plans
 - B2a. Safety Plans should include an MSDS list of all products being used as part of a system, but also including substances being used to complete the work (i.e. fuels, solvents, cleaners, etc.). This data should be included within the submittal, and a copy kept on the site.
 - C. Reports

- 02 04 00 **Cutting and Patching**
 - 1.05 C. Proposals for Cutting and Patching

- 02 05 00 **Demolition and Removal**
 - 1.05 C. Demolition Plan

- 02 82 16 **Engineering Control of Asbestos Containing Roofing Materials**
 - 1.06 C1. Plan for Non-Friable Asbestos Containing Roofing Materials.
 - C2. Copy of SCDHEC Notification for Demolition Form.
 - C3. Copy of SCDHEC Notification Renovation Project.

1226 YEAMANS HALL ROAD
HANAHAN, SC 29410
843-566-0161
fax 843-566-0162

ADCENGINEERING.COM



- C4. Landfill Approval.
- D1. Plan for Safety Precautions
- D2. Landfill Approval
- D3. Employment Training Certificates
- D4. Testing Laboratory
- D5. Private Qualified Person Documentation
- D6. Medical Certification
- D7. Respiratory Protection Program
- D8. Field Test Reports
- D9. Records
- D10. Manufacturer's Catalog Data
- D11. Statements
- D12. Certificates

03 52 00 **Lightweight Insulating Concrete/Gypsum Deck Repairs**

- 1.04 C. Product Data
- D. MSDS

05 55 00 **Metal Fabrications**


- 1.04 C. Manufacturer' Catalog Data
- D. Certificates of Compliance
- E. MSDS

06 10 00 **Rough Carpentry**

- 1.04 C. Certificate of Pressure Treatment
- D. Certificate of Grade
- E. Certificate of Fastener Types
- F. Layout Plan for Carpentry
- G. MSDS

07 22 00 **Thermal Roof Insulation**

- 1.04 C. Manufacturer's Catalog Data
- D. Drawings
- E. Instructions
- F. Statements
- G. Test Reports
- H. Data
- I. Samples
- J. MSDS

- 
- 07 31 09 **Slate Roofing Repair**
 - 1.04 D. Manufacturer's Catalog
 - E. Samples
 - F. Statements
 - G. Administrative or Close-Out Submittals

 - 07 53 07 **Modified Bitumen Cap Sheet and Felt Roofing System**
 - 1.04 C. Manufacturer's Catalog
 - D. Statements
 - E. Certificates of Compliance
 - F. Administrative or Close-Out Submittals
 - H. MSDS

 - 07 60 00 **Sheet Metal**
 - 1.04 C. Drawings
 - D. Samples
 - E. Color Samples
 - F. Drains and Accessories
 - G. MSDS

 - 07 92 00 **Sealants for Roofing and Sheet Metal**
 - 1.04 C. Manufacturer's Catalog Data
 - D. Manufacturer's Standard Color Chart
 - E. Manufacturer's Instructions
 - F. Samples
 - G. Sample Installations
 - H. Certificates of Compliance
 - I. MSDS

End of Required Submittal List

SECTION 01 45 00

QUALITY CONTROL

PART 1 - GENERAL

1.01 SUMMARY

- A. Contractor has full and complete responsibility for the quality control of this project. Quality assurance services by the Owner or any of his consultants is for the benefit of the Owner.
- B. Quality assurance services are provided by the Owner, his representatives and the Third Party Firms for the Owner's exclusive benefit. Within this Contract, the Contractor shall provide scheduling, coordination and written responses to all quality assurance and third party inspection services.
- C. The Contractor is required to provide complete and full access for the Owner and the Owner's Representative to complete Quality Assurance Services.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. The attention of the Contractor and the Subcontractor of this Section is directed to the Instructions to Bidders concerning substitution of materials and equipment.
- C. Section 01 33 00 - Submittals: Submission of Manufacturers' Instructions, Shop Drawings, Product Data, and Certificates.
- D. All technical specification sections.

1.03 QUALITY CONTROL OF INSTALLATION

- A. Contractor to maintain daily log of ongoing punch list items based on daily quality control inspections.
- B. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- C. Comply fully with manufacturers' instructions, including each step in sequence.
- D. Should manufacturers' instructions conflict with Construction Documents, request clarification from Consultant/Engineer before proceeding.
- E. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

- F. Perform work by persons qualified to produce workmanship of specified quality.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.04 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced, and to provide clarifications for any issues not covered within this specification.
- B. Conform to reference standard by date of issue current on date of Construction Documents.
- C. Obtain copies of standards when required by Construction Documents.
- D. Should specified reference standards conflict with Construction Documents, request clarification for Consultant/Engineer before proceeding.
- E. The contractual relationship of the parties to the Contract shall not be altered from the Construction Documents by mention or inference otherwise in any reference document.

1.05 FIELD SAMPLES

- A. Install field samples at the site as required by individual specifications sections for review.
- B. Acceptable samples represent a quality level for the work.
- C. Where field sample is specified in individual sections to be removed, clear area after Consultant/Engineer has accepted field sample.

1.06 MOCK-UP

- A. Tests will be performed under provisions identified in this section.
- B. Assemble and erect specified items, with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Where mock-up is specified in individual sections to be removed, clear area after Consultant/Engineer has accepted mock-up.

1.07 INSPECTION AND TESTING LABORATORY SERVICES

- A. Owner may appoint, employ, and pay for services of an independent firm to perform inspection and testing, unless otherwise required in Construction Documents.
- B. Reports will be submitted by the firm to the Consultant/Engineer, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Construction Documents.

- C. Contractor shall provide access and coordination with firm.
- D. Cooperate with Consultant/Engineer and/or independent firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
 - 1. Notify Consultant/Engineer seven (7) days prior to expected time for operations requiring their coordination or review.
 - 2. Make arrangements with the firm and pay for additional samples and tests required for Contractor's use.
 - 3. Re-testing, re-inspections or additional inspections required because of non-conformance to specified requirements shall be performed by the Consultant/Engineer. Payment for these services will be charged to the Contractor by deducting inspection or testing charges from the Contract Sum/Price.

1.08 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. Submit qualifications of observer to Owner and Consultant/Engineer five (5) days in advance of required observations.
- B. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, warranty inspection as applicable, and to initiate instructions when necessary.
- C. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Schedule site visit a minimum of three (3) days in advance, and submit report in duplicate within three (3) days of visit to Owner and Consultant/Engineer for review.

1.09 UNIT PRICED QUANTITIES

- A. In accordance with Section 01 21 10, Unit Prices and Allowances, the Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.
- B. The Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.
- C. Provide photograph or videotape documentation of repairs.
- D. Locate quantities and show their locations on the drawings.
- E. Provide actual used quantities on each Application for Payment request.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 45 00

SECTION 01 50 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

- A. Charcoal Filters
- B. Landscape/Paving Protection of Adjacent Surfaces
- C. Building Envelope
- D. Coordination of Space
- E. Electricity and Lighting
- F. Telephone Service
- G. Water
- H. Sanitary Facilities
- I. Barriers
- J. Protection of Installed Work
- K. Cleaning During Construction
- L. Field Offices, Sheds and Trailers
- M. Removal
- N. General Safety
- O. Security
- P. Identification of Contractor Personnel

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this section.
- B. The attention of the contractor and the subcontractor of this section is directed to the Instructions to Bidders concerning substitution of materials and equipment.
- C. Section 00 60 15: USC Supplementary Conditions
- D. Section 01 11 00: Summary of Work: Contractor use of premises.
- E. Section 01 77 00: Contract Close-Out: Final Cleaning
- F. Section 02 82 16: Engineering Control of Asbestos Containing Materials

1.03 CHARCOAL FILTERS

- A. When working with solvents, cleaners or adhesives, provide a filter medium with activated charcoal at all air intakes and other roof and wall openings.
 - 1. Place 2 layers over all air intakes and other roof and wall openings and secure in place.
 - 2. Monitor, remove and replace as need to maintain performance.

1.04 LANDSCAPE/PAVING PROTECTION OF ADJACENT SURFACES

- A. Carefully protect trees, shrubbery, grass, concrete, walkways and asphalt surfaces during the course of the project.
- B. Damaged trees and shrubbery will require replacement with new, of equal size/age at no cost to the Owner.
- C. Return grass to its original condition.
- D. Ensure construction sequence protects the facility, grass, grounds, concrete, walkways and asphalt pavement surfaces.
- E. Provide protection for concrete, asphalt and other and finished surfaces adjacent to work areas.
- F. Access to building envelope from grade to 25 feet above will require ladders verses motorized equipment due to landscaping.

1.05 BUILDING ENVELOPE

- A. Provide protection to all building envelope surfaces (roofs, walls, fenestrations, landscaping, etc.).
- B. Cover roof with plywood in area of work (i.e. path of traffic, scaffolding, etc.).
- C. Clean work area and keep all horizontal surfaces (roof and grade) free of construction debris daily.
- D. Report damages immediately. Contractor is required to have proper repairs made within 7 days of occurrence. However, temporary repairs shall be immediate and maintained until proper, long-term repairs are made. Owner and Consultant/Engineer must approve of repair technique to be used.
- E. Minimize traffic over roof and completed work.

1.06 COORDINATION OF SPACE

- A. Owner and Consultant/Engineer shall determine actual laydown areas, storage areas, and extent of work site.
- B. No personally owned vehicles allowed at site.

1.07 ELECTRICITY AND LIGHTING

- A. Provide service required for construction operations through existing building service. Owner will provide electricity at the source. Contractor must provide access to that source. The method of access must be approved by Owner and conform to all applicable electrical and building codes. All temporary electrical wiring must be provided with proper conduit protection. The Owner must approve the path of the access.
- B. Permanent lighting may be used during construction. Maintain lighting and make routine repairs.
- C. Return all services to their original condition.

1.08 TELEPHONE SERVICE

- A. Emergency telephone numbers must be made available for the Owner, for the Project Manager, Superintendent and Foreman for the Contractor.

1.09 WATER

- A. Provide service required for construction operations from existing building systems. Extend branch piping with outlets located so that water is available by use of hoses.
- B. Return all services to their original condition.

1.010 SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Do not use existing building facilities.

1.11 BARRIERS

- A. Provide as required to prevent public entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide six (6) foot high fence around construction laydown area with locks, or provide secure trailer at site. (Construction: Commercial grade chain link fence.)
- C. Provide barriers around trees and plants designated to remain. Protect against vehicular traffic, stored materials, dumping, chemically injurious materials, and puddling or continuous running water.

1.12 PROTECTION OF INSTALLED WORK

- A. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.

- B. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings. Protect finished surface from traffic, movement of heavy objects, and storage.
- C. Prohibit traffic and storage on newly installed work surfaces, on sidewalks, roads and landscaped areas.

1.13 CLEANING DURING CONSTRUCTION

- A. Control accumulation of waste materials and rubbish; periodically dispose of off-site.
- B. Remove and dispose of asbestos containing materials as called for in Section 02 82 16, Engineering Control of Asbestos Containing Materials.
- C. Clean site daily.

1.14 FIELD OFFICES AND TRAILERS

- A. Office: Not required.
- B. Storage Sheds for Tools, Materials, and Equipment: Weather-tight, with adequate space for organized storage and access, and lighting for inspection of stored materials.

1.15 REMOVAL

- A. Remove temporary protection, materials, equipment, services, and construction prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary facilities. As a minimum, remove spills to a depth of 2 feet beyond the contaminant. Restore existing facilities used during construction to specify, or to original, condition.

1.16 GENERAL SAFETY

- A. Protection and safety of occupants, visitors, workmen, and building and grounds is of vital importance. Take precautions to ensure a safe work area.
- B. Conduct work in accordance with applicable federal, state, and local regulations governing safety and safe work practices.
- C. Ingress/Egress: Provide necessary protection for pedestrians, occupants and visitors related to this project.
- D. If a hurricane is projected for project site location, properly protect and secure all elements of the facility.

1.17 SECURITY

- A. Establish and maintain security program to ensure site is cleaned up of all materials and equipment at the end of each work day to ensure pedestrians, occupants and visitors related to this project have safe secure environment specific to the construction project.

1.18 IDENTIFICATION OF CONTRACTOR PERSONNEL

- A. While on site, wear uniforms with company name, or picture identification badges with name of person and company name.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 50 00

SECTION 01 52 05

SAFETY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. This facility will remain functional during construction. All necessary safety measures shall be provided to protect occupants, pedestrians and individuals in the surrounding areas potentially affected by this work.
- B. This section includes all necessary procedures to accomplish the work within these Construction Documents to the extent applicable to accomplish the scope of this project.
- C. Contractor shall ensure his means and methods ensure the facilities components are stabilized, shored and protected during demolition and construction.
- D. Contractor shall establish and maintain security program to ensure site is cleaned up of all materials and equipment at the end of each work day to ensure occupants, pedestrians and individuals have safe secure environment specific to the construction project.
- E. Any applicable requirements for this section may be submitted with the “Demolition Plan” of Section 02 05 00, Demolition and Removal.
- F. Contractor shall adhere to local, state and federal requirements including SCDHEC and OSHA.
- G. Basis for several requirements in this section is COE EM-385-1-1.
- H. Safety Plans should include an MSDS list of all products being used as part of a system, but also including substances being used to complete the work (i.e. fuels, solvents, cleaners, etc.). This data should be included within the submittal, and a copy kept on the site.
 - 1. MSDS sheets are required for all products/materials used for this project. Any products with strong or distinct odors must be identified prior to use and submitted to Consultant/Engineer for review and approval.
- I. Charcoal Filters
 - 1. When working with solvents, cleaners or adhesives, provide a filter medium with activated charcoal at all air intakes and other roof and wall openings.
 - a. Place 2 layers over all air intakes and other roof and wall openings and secure in place. Confirm this will not affect the operation or performance of any related mechanical equipment.
 - b. Monitor, remove and replace as need to maintain performance.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions and Supplementary Conditions of these specifications shall govern work under this Section.
- B. The attention of the Contractor and the Subcontractor of this Section is directed to the Instructions to Bidders concerning substitution of materials and equipment.
- C. Section 02 04 00: Cutting and Patching
- D. Section 02 05 00: Demolition and Removal
- E. Section 02 82 16: Engineering Control of Asbestos Containing Materials
- F. Technical Specifications

1.03 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced, and to provide any clarifications for issues not covered within this specification.
- B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
 - 1. ANSI A10.14 (Latest Edition) Construction and Demolition Operations - Requirements for Safety Belts, Harnesses, Lanyards and Lifelines for Construction and Demolition Use
 - 2. ANSI Z359.1 (Latest Edition) Safety Requirements for Personal Fall Arrest Systems
- C. ASME INTERNATIONAL (ASME):
 - 1. ASME B30.5 (Latest Edition) Mobile Cranes
 - 2. ASME B30.22 (Latest Edition) Articulating Boom Cranes
- D. U.S. ARMY CORPS OF ENGINEERS (USACE):
 - 1. COE EM-385-1-1 (Latest Edition) Safety and Health Requirements Manual
- E. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):
 - 1. NFPA 10 (Latest Edition) Portable Fire Extinguishers
 - 2. NFPA 70 (Latest Edition) National Electrical Code
 - 3. NFPA 241 (Latest Edition) Safeguarding Construction, Alteration, and Demolition Operations

F. OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION:

1. 29 CFR 1926 – Safety and Health Regulations for Construction

G. SOUTH CAROLINA DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL (SCDHEC):

1. SCDHEC Regulation 61-107.11, Construction, Demolition and Land-Clearing Debris Landfills

1.04 DEFINITIONS

- A. **Competent Person.** A competent person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- B. **Confined Space.** A space which, by design, has limited openings for entry and exit, unfavorable natural ventilation which could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy. Confined spaces include, but are not limited to storage tanks, process vessels, pits, silos, vats, degreasers, reaction vessels, boilers, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, and pipelines.
- C. **First Aid.** First aid is any one-time treatment, and any follow-up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care, even though provided by a physician or registered professional personnel.
- D. **Health and Safety Plan (HASP).** The HASP is the equivalent term of SHP or SSHP used in COE EM-385-1-1.
- E. **Lost Workdays.** The number of days (consecutive or not) after, but not including, the day of injury or illness during which the employee would have worked but could not do so; that is, could not perform all or part of his normal assignment during all or any part of the workday or shift; because of the occupational injury or illness.
- F. **Medical Treatment.** Medical treatment includes treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even though provided by a physician or registered personnel.
- G. **Multi-employer work site (MEWS).** A multi-employer work site, as defined by OSHA, is one in which many employers occupy the same site. The Owner considers the general contractor to be the "controlling authority" for all work site safety and health of the subcontractors.

- H. Operating Envelope. There is an "operating envelope" around any crane, and inside the envelope are the operator, riggers, rigging gear between the hook and the load, the load and the crane's supporting structure (ground, rail, etc.).
- I. Qualified Person. One who, by possession of a recognized degree, certificate, or professional standing, or extensive knowledge, training, and experience, has successfully demonstrated his or her ability to solve or resolve problems related to the subject matter, the work or the project.
- J. Recordable Occupational Injuries or Illnesses. Any occupational injuries or illnesses which result in:
 - 1. Fatalities, regardless of the time between the injury and death, or the length of the illness; or
 - 2. Lost Workday Cases, other than fatalities, that result in lost workdays, or
 - 3. Non-Fatal Cases without lost workdays, which result in transfer to another job or termination of employment, or require medical treatment (other than first aid) or involve: loss of consciousness or restriction of work or motion. This category also includes any diagnosed occupational illnesses, which are reported to the employer but are not classified as fatalities or lost workday cases.
- K. Safety Specialist. The superintendent or other qualified or competent person who is responsible for the on-site safety required for the project. Serious Accidents. Any work-related incident, which results in, a fatality, in-patient hospitalization of three or more employees, or property damage in excess of \$200,000.
- L. Significant Accident. Any contractor accident which involves falls of (4 feet) or more, electrical accidents, confined space accidents, diving accidents, equipment accidents, crane accident or fire accidents, which, result in property damage of \$10,000 or more, but less than \$200,000; or when fire department or emergency medical treatment (EMT) assistance is required.
- M. Weight Handling Equipment (WHE) Accident. A WHE accident occurs when any one or more of the six elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; and collision, including unplanned contact between the load, crane, and/or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, roll over, etc.).

1.05 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals.
- B. Plans
 - 1. Accident Prevention Plan (APP) ; G
 - 2. Health and Safety Plan (HASP) ; G
 - a. Safety Plans should include an MSDS list of all products being used as part of a system, but also including substances being used to complete the work (i.e. fuels, solvents, cleaners, etc.). This data should be included within the submittal, and a copy kept on the site.
- C. Reports
 - 1. Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."
 - 2. Crane Reports, if used.
 - 3. Crane Critical Lift Plan, if used.

1.06 QUALITY ASSURANCE

- A. Safety Specialist
 - 1. Qualifications
 - a. Qualifications of Safety Specialist:
 - 1) Ability to manage the on-site contractor safety program through appropriate management controls.
 - 2) Ability to identify hazards and have the capability to expend resources necessary to abate the hazards.
 - 3) Must have worked on similar types of projects that are equal to or exceed the scope of the project assigned with the same responsibilities.
 - 4) Shall, as a minimum, have attended an OSHA training qualification class including at least 10 hours of classroom instruction.
 - b. Qualifications of Qualified Person, Confined Space Entry. The qualified person shall be capable (by education and specialized training) of anticipating, recognizing, and evaluating employee exposure to hazardous substances or other unsafe conditions in a

confined space. This person shall be capable of specifying necessary control and protective action to ensure worker safety.

- c. Qualification of Crane Operators. Crane operators shall meet the requirements in COE EM-385-1-1, Appendix G.

B. Meetings

1. Preconstruction Conference

- a. The Safety Specialist shall attend the preconstruction conference.

C. Meeting on Work Procedures

- 1. Meet with Owner to discuss work procedures and safety precautions required by the APP. Ensure the participation of the contractor's superintendent, the quality control, and the Safety Specialist.
- 2. Meet with Owner to discuss work procedures and safety precautions required by the HASP. Ensure the participation of the contractor's superintendent, the quality control, and the Safety Specialist.

D. Weekly Safety Meetings

- 1. Hold weekly meeting at the project site. Attach minutes showing contract title, signatures of attendees and a list of topics discussed to the QC Contractor Quality Control daily report.

E. Work Phase Meetings

- 1. The appropriate AHA shall be reviewed and attendance documented by the Contractor at the preparatory, initial, and follow-up phases of quality control inspection.

F. New Employee Indoctrination

- 1. New employees will be informed of specific site hazards before they begin work. Documentation of this orientation shall be kept on file at the project site.

G. Plans

1. Accident Prevention Plan (APP)

- a. Submit the APP at least 15 calendar days prior to start of work at the job site, following Appendix A of COE EM-385-1-1. Make the APP site specific.

H. Health and Safety Plan (HASP)

1. Submit the HASP for projects involving the handling of hazardous materials with technical submittals in accordance with Section 01 33 00, Submittals.

I. Reports

1. Crane Reports, if used.
 - a. Submit crane inspection reports required in accordance with COE EM-385-1-1 and as specified herein with Daily Reports of Inspections.
2. Crane Critical Lift Plan, if used.
 - a. Submit crane critical lift plan COE EM-385-1-1 section 16 when crane loads meet or exceed 75 percent of the crane load capacity in any configuration.

J. Certificate of Compliance

1. The Contractor shall provide a Certificate of Compliance for each crane under this contract. Certificate shall state that the crane and rigging gear meet applicable OSHA regulations (with the contractor citing which OSHA regulations are applicable, e.g., cranes used in construction, demolition, or maintenance shall comply with 29 CFR 1926. Certify on the Certificate of Compliance that the crane operator(s) is qualified and trained in the operation of the crane to be used. These certifications shall be posted on the crane.

1.07 ACCIDENT PREVENTION PLAN (APP)

- A. Prepare the APP in accordance with the required and advisory provisions of COE EM-385-1-1 including Appendix A, "Minimum Basic Outline for Preparation of Accident Prevention Plan," and as modified herein. Include the associated AHA and other specific plans, programs and procedures listed on Pages A-3 and A-4 of COE EM-385-1-1, some of which are listed below.

B. Contents of the Accident Prevention Plan

1. Name and safety related qualifications of safety specialist (including training and any certifications).
2. Qualifications of competent and of qualified persons.
3. Identity of the individual who will complete exposure data (hours worked); accident investigations, reports and logs; and immediate notification of accidents to include subcontractors.

4. Emergency response plan. Conform to COE EM-385-1-1, paragraph 01.E and include a map denoting the route to the nearest emergency care facility with emergency phone numbers. Contractor may be required to demonstrate emergency response.
5. Confined Space Entry Plan. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)
6. Hazardous Material Use. Provisions to deal with hazardous materials, pursuant to the Contract shall include the following as applicable:
 - a. Inventory of hazardous materials to be introduced to the site with estimated quantities.
 - b. Plan for protecting personnel and property during the transport, storage and use of the materials.
 - c. Emergency procedures for spill response and disposal, including a site map with approximate quantities on site at any given time. The site map will be attached to the inventory, showing where the hazardous substances are stored.
 - d. Material Safety Data Sheets for inventoried materials not required in other section of this specification.
 - e. Labeling system to identify contents on all containers on-site.
 - f. Plan for communicating high health hazards to employees and adjacent occupants.
 - g. Hazardous Energy Control Plan. For hazardous energy sources, comply with COE EM-385-1-1, paragraph 12.A.07.
7. Critical Lift Plan. Weight handling critical lift plans shall be prepared and signed in accordance with COE EM-385-1-1, paragraph 16.c.18.
8. Alcohol and Drug Abuse Plan
9. Describe plan for random checks and testing with pre-employment screening in accordance with state requirements.
10. Description of the on-site prevention program
 - a. Fall Protection and Prevention (FP&P) Plan. The plan shall be site specific and address all fall hazards in the work place. It shall address

how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 6 feet. A qualified person shall prepare the plan. The plan shall include fall protection and prevention systems, equipment and methods employed, responsibilities, rescue and escape equipment and operations, training requirements, and monitoring methods. FP&P Plan shall be revised once every six months for lengthy projects, to reflect any new changes during the course of construction, due to changes of personnel, equipment, systems or work habits.

- b. Silica Exposure Reduction. The plan shall include specific procedures to prevent employee silica inhalation exposures.
- c. Section 02 04 00, Cutting and Patching.
- d. Section 02 05 00, Demolition and Removal.
- e. Asbestos Abatement Plan. The safety and health aspects prepared in accordance with Section 02 82 16, Engineering Control of Asbestos Containing Materials.
- f. Training Records and Requirements. List of mandatory training and certifications which are applicable to this project (e.g. explosive actuated tools, confined space entry, fall protection, crane operation, vehicle operator, forklift operators, personal protective equipment); list of requirements for periodic retraining/certification; outline requirements for supervisory and employee safety meetings.
- g. Severe Weather Plan. Procedures of ceasing on-site operations during lightning or upon reaching maximum allowed wind velocities.
- h. Barricades, signage and protective walkways.

1.08 ACTIVITY HAZARD ANALYSIS (AHA)

- A. Prepare for each phase of the work. As a minimum, define activity being performed, sequence of work, specific hazards anticipated, control measures to eliminate or reduce each hazard to acceptable levels, training requirements for all involved, and the competent person in charge of that phase of work. For work with fall hazards, including fall hazards associated with scaffold erection and removal, identify the appropriate fall arrest systems. For work with materials handling equipment, address safeguarding measures related to materials handling equipment. For work requiring excavations, include excavation safeguarding requirements. The appropriate AHA shall be reviewed and attendance documented by the Contractor at the preparatory, initial, and follow-up phases of quality control inspection.

1.09 HEALTH AND SAFETY PLAN (HASP)

- A. Prepare as required by 29 CFR 1910.120 and COE EM-385-1-1.
- B. Qualified Personnel
 - 1. Use a person with sufficient training and experience to prepare the HASP, conduct activity hazard analyses, and prepare detailed plan for demolition, removal, and disposal of materials.
- C. Contents
 - 1. In addition to the requirements of COE EM-385-1-1, Table 28-1, the HASP must include:
 - 2. Location, size, and details of control areas.
 - 3. Location and details of decontamination systems.
 - 4. Interface of trades involved in the construction.
 - 5. Sequencing of work.
 - 6. Disposal plan.
 - 7. Sampling protocols.
 - 8. Testing labs.
 - 9. Protective equipment.
 - 10. Pollution control.
 - 11. Evidence of compliance with 29 CFR 1910.120 and 29 CFR 1926.65.
 - 12. Training and certifications of CIH, CSP or other competent persons.

1.10 DRUG PREVENTION PROGRAM

- A. Conduct a proactive drug and alcohol use prevention program for all workers, prime and subcontractor, on the site. Ensure that no employees either use illegal drugs or consume alcohol during work hours. Ensure there are no employees under the influence of drugs or alcohol during work hours. After accidents, collect blood, urine or saliva specimens and test injured employee's influence. A copy of the test shall be made available to the Owner upon request.

1.11 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

A. Scaffolds

1. Delineate the fall protection requirements necessary during the erection and dismantling operation of scaffolds used on the project in the Fall Protection and Prevention (FP&P) plan and activity hazard analysis for the phase of work.

B. Training

1. Institute a fall protection-training program. As part of the Fall Hazard Protection and Prevention Program, Contractor shall provide training for each employee who might be exposed to fall hazards.

1.12 DUTIES OF THE SAFETY SPECIALIST

A. Ensure construction hazards are identified and corrected.

B. Maintain applicable safety reference material on the job site.

C. Maintain a log of safety inspections performed.

D. Attend the pre-construction conference as required.

E. Identify hazardous conditions and take corrective action. Failure to do so will result in a dismissal from the site, with a work stoppage pending approval of suitable replacement personnel.

1.13 DISPLAY OF SAFETY INFORMATION

A. Display the following information in clear view of the on-site construction personnel:

1. Map denoting the route to the nearest emergency care facility with emergency phone numbers.
2. AHA
3. Confined space entry permit.
4. A sign indicating the number of hours worked since last lost workday accident.

1.14 SITE SAFETY REFERENCE MATERIALS

A. Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturers' manuals.

1.15 HIGH HAZARD WORK AND LONG DURATION

- A. Work under this contract is potentially hazardous. Pursuant to contract clause "FAR 52.236-13, Accident Prevention, Alternate I," submit in writing additional proposals for effecting accident prevention under hazardous conditions. Meet in conference with Owner to discuss and develop mutual understanding relative to the administration of the overall safety program.

1.16 EMERGENCY MEDICAL TREATMENT

- A. Contractors will arrange for their own emergency medical treatment. Owner has no responsibility to provide emergency medical treatment.

1.17 REPORTS

A. Accident Reports

1. For recordable occupational injuries and illnesses, the general contractor shall conduct an accident investigation to establish the root cause(s) of the accident and notify the owner.
2. For a weight handling equipment accident the General contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete an Accident Report and provide to the Owner within 30 calendar days of the accident.

B. Notification

1. Notify the Owner as soon as practical, but not later than four hours, of any accident meeting the definition of Recordable Occupational Injuries or Illnesses or Significant Accidents. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; and brief description of accident (to include type of construction equipment used, PPE used, etc.).

C. Monthly Exposure Report

- a. Monthly exposure reporting, to the Owner is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor.

D. OSHA Citations and Violations

1. Provide the Owner with a copy of each OSHA citation, OSHA report and contractor response. Correct violations and citations promptly and provide written corrective actions to the Owner.

E. Crane Notification

1. Notify Owner at least 15 days prior to bringing any crane equipment on-site so that the owner may arrange for any additional quality assurance spot checks necessary by the owner.

PART 2 - PRODUCTS

2.01 FALL PROTECTION ANCHORAGE

- A. Fall protection anchorage, conforming to ANSI Z359.1, used during construction shall be completely removed.
- B. Any existing forms of fall protection shall be reviewed by the Contractor for compliance to authorities noted herein and shall become the responsibility of the Contractor.

2.02 CONFINED SPACE SIGNAGE

- A. Provide permanent signs integral to or securely attached to access covers for new permit required confined spaces. Signs wording: "DANGER--PERMIT REQUIRED CONFINED SPACE - DO NOT ENTER -" on bold letters a minimum of one inch in height and constructed to be clearly legible with all paint removed. The signal word "DANGER" shall be red and readable from 5 feet.

PART 3 - EXECUTION

3.01 CONSTRUCTION

- A. Comply with COE EM-385-1-1, NFPA 241, the accident prevention plan, the activity hazard analysis and other related submittals and activity fire and safety regulations.
- B. Hazardous Material Exclusions
 1. Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint are prohibited. Owner may consider exceptions to the use of any of the above excluded materials upon written request by Contractor.
- C. Unforeseen Hazardous Material
 1. The design should have identified materials such as PCB, lead paint, and friable and nonfriable asbestos. If additional material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Owner immediately.

3.02 PERSONNEL PROTECTION

A. Fall Protection

1. Enforce use of the fall protection device designated for each specific work activity in the FP&P plan and/or AHA all times when an employee is on a surface 6 feet or more above lower levels. Personal fall arrest systems are required when working from an articulating or extendible boom, scissor lifts, swing stages, or suspended platform. Fall protection must comply with ANSI A10.14.

B. Personal Fall Arrest Device

1. Personal fall arrest device equipment, systems, subsystems, and components shall meet ANSI Z359.1, "Safety Requirements for Personal Fall Arrest Systems". Only a full-body harness with a shock absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest device. Body belts may only be used as a positioning device system such as steel reinforcing assembly and in conjunction with another fall arrest system. Harnesses shall have a fall arrest attachment, which is a connector, affixed to the body support (usually a D-ring) and specifically designated for attachment to the rest of the system. Only double locking snap hooks and carabiners shall be used. Webbing, straps, and ropes shall be made of synthetic fiber.

C. Fall Protection for Roofing Work

1. Fall protection controls shall be implemented based on the type of roof being constructed and work being performed. The roof area to be accessed shall be evaluated for its structural integrity including weight-bearing capabilities for the projected loading.
 - a. Low Sloped Roofs:
 - 1) For work within six (6) feet of an edge, on low-slope roofs, personnel shall be protected from falling by use of personal fall arrest systems, guardrails, safety nets or other OSHA approved methods.
 - 2) For work greater than six (6) feet from an edge, warning lines shall be erected and installed in accordance with 29 CFR 1926.502(f).
 - 3) Steep Roofs: Work on steep roofs requires personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction.

D. Safety Nets

1. If safety nets are used as the selected fall protection system on the project, they shall be provided at unguarded workplaces, over water, machinery, dangerous operations and leading edge work.

E. Existing Anchorage

1. Existing anchorages, used for attachment of personal fall arrest equipment, if to be used by the Contractor, shall be re-certified by the contractor's fall protection engineer (QP).

3.03 SCAFFOLDING

- A. Employees shall be provided with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Stair towers or ladders built into scaffold systems in accordance with USACE EM 385-1-1 Appendix J are required for work platforms greater than 20 feet in height. Contractor shall ensure that employees that are qualified perform scaffold erection. Do not use scaffold without the capability of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection plan. Minimum platform size shall be based on the platform not being greater in height than three times the dimension of the smallest width dimension for rolling scaffold. Some Baker type scaffolding has been found not to meet these requirements. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward. Special care shall be given to ensure scaffold systems are not overloaded. Outrigger brackets used to extend scaffold platforms on self supported scaffold systems for the storage of material is prohibited. The first tie-in shall be at the height equal to 4 times the width of the smallest dimension of the scaffold base.

3.04 BARRICADES, SIGNAGE AND PROTECTIVE WALKWAYS

- A. Upon completion of Contractor's staging, sequencing and means/methods decisions, Contractor shall outline proposed plan to Consultant/Owner for approval. Required barricades, signage and protective walkway shall be provided by the Contractor.

3.05 EQUIPMENT

A. Material Handling Equipment

1. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.
2. The use of hooks on equipment for lifting of material must be in accordance with manufacturers printed instructions.

B. Weight Handling Equipment

1. Cranes must be equipped with:
 - a. Load Indicating Devices (LIDs) and a Boom Angle or Radius Indicator,
 - b. or Load-Moment Indicating Devices (LMIs).
 - c. Anti-two-block prevention devices.
 - d. Boom Hoist Hydraulic Relief Valve, Disconnect, or Shutoff (stops hoist when boom reaches a predetermined high angle).
 - e. Boom Length Indicator (for telescoping booms).
 - f. Device to prevent uncontrolled lowering of a telescoping hydraulic boom.
 - g. Device to prevent uncontrolled retraction of a telescoping hydraulic boom.
2. The Contractor shall notify the Owner, in advance, of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated.
3. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person (as defined in ASME B30.5). All testing shall be performed in accordance with the manufacturers recommended procedures.
 - a. The Contractor shall comply with ASME B30.5 for mobile cranes and ASME B30.22 for articulating boom cranes.
4. Each load shall be rigged/attached independently to the hook/master-link in such a fashion that the load cannot slide or otherwise become detached. Christmas-tree lifting (multiple rigged materials) is not allowed.
5. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall follow the requirements of ASME B30.5 or ASME B30.22 as applicable.
6. Crane supported work platforms shall only be used in extreme conditions if the Contractor proves that using any other access to the work location would provide a greater hazard to the workers. Personnel shall not be lifted with a live hoist or friction crane.
7. A fire extinguisher having a minimum rating of 10BC and a minimum nominal capacity of 5lb of extinguishing agent shall be available at all

Safety Requirements

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operator stations or cabs of cranes. Portable fire extinguishers shall be inspected, maintained, and recharged as specified in NFPA 10, Standard for Portable Fire Extinguishers.

8. All employees shall be kept clear of loads about to be lifted and of suspended loads.
9. A weight handling equipment operator shall not leave his position at the controls while a load is suspended.
10. A Contractor Crane Operation Checklist shall be used by the contractor's representative during oversight of contractor crane operations (refer to COE EM-385-1-1 Appendix H).
11. Only contractor crane operators who have met the requirements of 29 CFR 1910.94, 29 CFR 1910.120, 29 CFR 1926.65, 29 CFR 1926.502(f), COE EM-385-1-1, ASME B30.5, and ASME B30.22 and other local and state requirements shall be authorized to operate the crane.
12. Cribbing shall be utilized by the Contractor when performing lifts on outriggers.
13. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
14. A physical barricade must be positioned to prevent personnel from entering the tailswing area of the crane.
15. A substantial and durable rating chart containing legible letters and figures shall be provided with each crane and securely mounted onto the crane cab in a location allowing easy reading by the operator while seated in the control station.
16. Certification records which include the date of inspection, signature of the person performing the inspection along with the serial number or other identifier of the crane which was inspected. This record will always be available for review by owner personnel.
17. Written reports listing the load test procedures utilized along with any repairs or alterations performed on the crane will be available for review by the owner personnel.
18. Contractor shall certify that all of the crane operators have been trained not to bypass safety devices (e.g. anti-two block devices) during lifting operations.

3.06 ELECTRICAL

A. Conduct of Electrical Work

1. Cable intended to be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made

prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Owner and Station Utilities for identification. The Owner will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cutting remotely. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. Insulating blankets, hearing protection, and switching suits may be required, depending on the specific job and as delineated in the Contractor AHA.

B. Portable Extension Cords

1. Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered.

3.07 WORK IN CONFINED SPACES

A. Comply with the requirements in Section 06.I of COE EM-385-1-1. Any potential for a hazard in the confined space requires a permit system to be used.

1. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 06.I.05 of COE EM-385-1-1 for entry procedures.) All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.
2. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained.
3. Ensure the use of rescue and retrieval devices in confined spaces greater than 5 feet in depth. Conform to Sections 06.I.09, 06.I.10 and 06.I.11 of COE EM-385-1-1.
4. Include training information for employees who will be involved as entrant attendants for the work. Conform to Section 06.I.06 of COE EM-385-1-1.

3.08 HOUSEKEEPING

A. Clean-up

1. All debris in work areas shall be cleaned up daily or more frequently as necessary. Construction debris may be temporarily located in an approved location, however garbage accumulation must be removed each day.

B. Dust Control

1. In addition to the dust control measures required elsewhere in the Construction Documents, dry cutting of brick or masonry shall be prohibited. Wet cutting must address control of water run off.

3.09 ACCIDENT SCENE PRESERVATION

- A. For serious accidents, and accidents involving weight handling equipment, ensure the accident site is secured and evidence is protected remaining undisturbed until released by the Owner.

3.10 FIELD QUALITY CONTROL

A. Inspections

1. Include safety inspection as a part of the daily Quality Control inspections required in Section 01 45 00, Quality Control.

3.11 FLAMMABLE AND COMBUSTIBLE LIQUID HANDLING AND STORAGE

A. Safety Gas Containers

1. Handling of flammable and combustible liquids shall be in safety containers with flame arresters, with not more than 5 gallons capacity, having a spring-closing lid and spout cover and designed to safely relieve internal pressures under fire exposures. Flammable and combustible Liquids shall be stored in separate NFPA approved storage cabinets 50 feet away from any sources of ignition with suitable NO SMOKING OR OPEN FLAME signs posted in all such areas.

END OF SECTION 01 52 05

SECTION 01 60 00

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. Products
- B. Transportation and Handling
- C. Storage and Protection
- D. Product Options (Prior to Bid)
- E. Variations (After Contract Award)
- F. Systems Demonstration

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. The attention of the Contractor and the subcontractor of this section is directed to the Instructions to Bidders concerning substitution of materials and equipment.
- C. Section 01 11 00: Summary of Work
- D. Section 01 33 00: Submittals
- E. Section 01 60 01: Substitution Request Form
- F. Section 01 77 00: Contract Close-Out

1.03 PRODUCTS

- A. Products include material, equipment, and systems.
- B. Comply with specifications and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a specification section, shall be the same, and shall be interchangeable.

1.04 TRANSPORTATION AND HANDLING

- A. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.

- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- C. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

1.05 STORAGE AND PROTECTION

- A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions. See applicable technical specification sections.
- B. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
- C. Arrange storage to provide access for inspection. Periodically inspect to ensure products are undamaged, and are maintained under required conditions.
- D. Store all equipment and materials on site in a trailer and secure at end of each days construction.

1.06 PRODUCT OPTIONS (PRIOR TO BID)

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards.
- B. Products Specified by Naming One or More Manufacturers: Submit a request for substitution for any manufacturer not specifically named.
- C. Products Specified by Naming Only One Manufacturer: No options, no substitutions allowed.

1.07 VARIATIONS (AFTER CONTRACT AWARD)

- A. Variation Consideration: After Contract has been executed, Owner will consider a formal request for variation (or deviation) of minor products, systems or criteria as field conditions justify, only for the benefit of the owner under the following conditions:
 - 1. Extended delivery time would seriously delay completion of project, or specified item is no longer available, or for unforeseen reasons beyond control of Contractor.
 - 2. Request is accompanied by complete data on proposed variation substantiating compliance with Construction Documents including product identification and description, performance and test data, references and samples where applicable, and an itemized comparison of proposed variation with products

specified or named by Addenda, with data relating to Contract time schedule, design and artistic effect where applicable and its relationship to separate contracts.

3. Request is accompanied by accurate cost data on proposed variation in comparison with product specified, whether or not modification of Contract Sum is to be a consideration.
- B. Contractor Representations: Request for substitutions based on above, when forwarded by Contractor to Consultant/Engineer, are understood to mean that Contractor:
1. Represents that he has personally investigated proposed substitute product and determined that it is equal or superior in all respects to that specified.
 2. Will provide the same guarantee for substitution that he would for that specified.
 3. Certifies that cost data presented is complete and includes all related costs under this Contract, but excludes costs under separate contracts and Consultant/Engineer's re-design costs, and that he waives all claims for additional costs related to substitution which subsequently become apparent.
 4. Will coordinate installation of accepted substitute, making such changes as may be required for work to be complete in all respects.
- C. Non-Consideration of Requests: Substitutions will not be considered if:
1. They are indicated or implied on shop drawing submissions without formal request required above.
 2. For their implementation they require a substantial revision of Construction Documents in order to accommodate their use.
- D. Approval, by Consultant/Engineer, of substitute materials and equipment shall not relieve Contractor from his responsibility to supply and install any additional materials, equipment or labor required to make substitution properly function within intent of Construction Documents, as issued for Bid, whether or not such additional materials, equipment or labor are shown on data submitted with request for approval and whether or not recognized by Consultant/Engineer or Contractor. Contractor shall supply and install such required additional material, equipment or labor solely at his own expense and at no additional cost to Owner.

1.08 SYSTEMS DEMONSTRATION

- A. Prior to final inspection, demonstrate operation of each system to Consultant/Engineer and Owner.
- B. Instruct Owner's personnel in operation, adjustment, and maintenance of equipment and systems, using the operation and maintenance data as the basis of instruction.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 60 00

substitution request form

Project Title: Upstate CASB Roof Replacement
Owner Project No.: H34-9543-JM-A
ADC Project No.: 11338
Project Manager: Mr. Christopher T. Waites Email: chrisw@adcengineering.com
ADC Engineering, Inc.

Complete and submit a copy of this form for approval of each proposed substitute item.

We submit for your consideration the following product instead of the specified item for this project:

	Specified Item		Proposed Substitution
Section:			
Paragraph:			
Manufacturer:			
Product:			

Attached are complete technical data for proper installation of proposed substitution. Laboratory tests and complete information on changes to drawings and/or specifications are included if applicable.

A. What is the total cost difference considering the overall project requirements?

B. What effect does substitution have on the overall project and schedule?

C. Differences between proposed substitution. Substantiate that the product/system proposed is equal or better than the specified item/system and meets all other contract requirements.

D. Manufacturer's warranties/guarantees of proposed and specified items:

E. What is the advantage/benefit for the owner to select/approve the proposed substitution?

The undersigned states that the function, appearance and quality are equivalent to or superior to the specified item.

SUBMITTED BY: _____
Signature *Firm* *Date*

Notification of Accepted Substitutions prior to bid will be by Addendum

1226 YEAMANS HALL ROAD
HANAHAN, SC 29410
843-566-0161
fax 843-566-0162

ADCENGINEERING.COM

Substitution Request Form
01 60 01-1

11338





THIS PAGE IS FOR USE BY CONSULTANT/ ENGINEER

SUBSTITUTION REQUEST FORM REVIEW

Project Title: College of Arts and Sciences Building
Selective Roof Replacement/Repairs

Owner Project No.: H34-9543-JM-A

ADC Project No.: 11338

Project Manager: Mr. Christopher T. Waites Email: chrisw@adcengineering.com

- Prior approval is not required.
- Accepted.
- Accepted as noted.
- Not accepted. Your request is being returned for the following reason(s). Resubmit if appropriate:
- Received after deadline.
- Not submitted by general contractor as required.
- Form incomplete.
- Insufficient information to review.
- Improperly submitted. (See Instructions to Bidders).
- Questions to be answered before approval as noted below.

REVIEWED BY: _____

Signature Date

SECTION 01 77 00

CONTRACT CLOSE-OUT

PART 1 - GENERAL

1.01 SUMMARY

- A. Close-Out Procedures
- B. Unit Price Quantities and Allowances
- C. Re-inspection Fees
- D. Final Cleaning
- E. Project Record Documents
- F. Operation and Maintenance Data
- G. Warranties
- H. Contract Close-Out Binder

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this section.
- B. The attention of the Contractor and the subcontractor of this section is directed to the Instructions to Bidders concerning substitution of materials and equipment.
- C. Section 00 65 01: USC Contractor's One Year Guarantee
- D. Section 01 11 00: Summary of Work.
- E. Section 01 50 00: Construction Facilities and Temporary Controls: Cleaning during construction.
- F. Section 01 77 05: Three-Year Contractor Warranty
- G. Section 01 77 15: Certification of Asbestos-Free Materials
- H. Section 01 77 20: Certificate of Substantial Completion – AIA G704
- I. Section 01 77 25: Contract Close-Out Check List
- J. Section 02 82 16: Engineering Control of Asbestos Containing Materials

1.03 CLOSE-OUT PROCEDURES

- A. Provide all required Close-Out Documents, bound together as a single package and submit to ADC Engineering, Inc. in triplicate. Any Close-Out Document packages not adhering to this requirement will be returned to the Contractor.
- B. In accordance with Section 01 33 00, Submittals, the value for Close-Out Documents will be no less than \$500.00.
- C. Comply with procedures stated in General Conditions of the Contract for issuance of Certificate of Substantial Completion.
- D. Owner will occupy project for the purpose of conduct of business, under provision stated in Certificate of Substantial Completion.
- E. When Contractor considers work has reached final completion, submit required written certification that Construction Documents have been reviewed, work has been inspected, and that work is complete in accordance with Construction Documents and ready for Consultant/Engineer's inspection.
- F. In addition to submittals required by the Conditions of the Contract, provide submittals required by governing authorities. Submit a final statement of accounting giving total adjusted Contract Sum, previous payments, and sum remaining due.
- G. Consultant/Engineer will issue final change order reflecting approved adjustments to Contract Sum not previously made by change order.

1.04 UNIT PRICED QUANTITIES AND ALLOWANCES

- A. In accordance with Section 01 21 10, Unit Prices and Allowances, the Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.
- B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.
- C. Provide photograph or videotape documentation of repairs.
- D. Locate quantities and show their locations on the applicable drawings.
- E. Provide actual used quantities on each Application for Payment request.

1.05 REINSPECTION FEES

- A. Should status of completion of work require re-inspection by Consultant/Engineer due to failure of work to comply with Contractor's claims on initial inspection, Owner will deduct the amount of Consultant/Engineer's compensation for re-inspection services from final payment to Contractor.

- B. Should the work exceed the contract substantial completion date, the Contractor will be responsible for Consultant/Engineer site visits/support for the Owner. Owner will deduct the amount of the Consultant/Engineer's services from the final payment.

1.06 FINAL CLEANING

- A. Execute prior to final inspection.
- B. Clean surfaces exposed to view, remove temporary labels, stains and foreign substances and polish transparent and glossy surfaces. Clean roofs, scuppers, roof drains, and drainage systems.
- C. Clean site; sweep paved areas, rake clean other surfaces.
- D. Remove waste and surplus materials, rubbish, and construction facilities from the project and from the site. Contractor will provide final cleaning after final acceptance.
- E. Site shall be in original or new condition upon completion.

1.07 PROJECT RECORD DOCUMENTS

- A. Record information on a set of drawings provided by Owner. Legibly mark each item to record actual construction, including:
 - 1. Field changes of dimension and detail.
 - 2. Changes made by modifications.
 - 3. Details not on original Contract Drawings.
 - 4. References to related shop drawings and modifications.
- B. Store documents separate from those used for construction.
- C. Keep documents current; do not permanently conceal any work until required information has been recorded.
- D. At Contract Close-Out, submit documents with transmittal letter containing date, Project title, Contractor's name and address, list documents, and signature of Contractor.

1.08 OPERATION AND MAINTENANCE DATA

- A. Prepare instructions and data in the form of an instruction manual by personnel experienced in maintenance and operation of described products.
- B. Submit the following:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Consultant/Engineer and Contractor.

2. Part 2: Operation and maintenance instructions, arranged by specification division. For each specification division, give names, addresses, and telephone numbers of subcontractors and supplies. List:
 - a. Appropriate design criteria.
 - b. List of Materials.
 - c. Maintenance instructions.
 - d. Shop drawings and product data.
- C. Provide roof information card as required within roof system sections.

1.09 WARRANTIES

- A. Provide triplicate, notarized copies. Execute Contractor's submittals and assemble documents executed by subcontractors, suppliers, and manufacturers. Provide table of contents and assemble in binder with durable plastic cover.
- B. All warranties will be dated based on the established Substantial Completion date.
- C. Manufacturer's Warranties
 1. Provide manufacturer's warranties for each individual specification section meeting specification requirements.
 - a. Attach copy of manufacturer's inspection punch list, any required letters of clarification, and flashing endorsement.
- D. Contractor Warranties
 1. Provide the Three-Year Contractor Warranty as required in the Contract Documents.

1.10 CONTRACT CLOSE-OUT BINDER

- A. The Contract Close-Out Checklist included in the Contract Documents shall be provided as the "Table of Contents" for the required Contract Close-Out Binder.
- B. Provide, a minimum, three (3) sets of all listed documents bound in sturdy, three ring binders.
- C. Each binder shall include a *copy* of the Final Change Order and the Final Application for Payment.
 1. The *original* Request for Substantial Completion, Request for Final Completion, Final Change Order and Final Application for Payment should not be included in the Close-Out Binder.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 77 00

THREE-YEAR CONTRACTOR WARRANTY FOR UPSTATE CASB ROOF REPLACEMENT

WHEREAS, _____ of
(Address) _____

Telephone: _____ herein called the "Prime Contractor", has performed the work for the
Upstate CASB Roof Replacement project.

Owner: University of South Carolina - Upstate
Facilities Management, 800 University Way
Spartanburg, SC 29303

Type of Building: _____

Address: _____

Area of Work: _____

Date of Acceptance: _____

Warranty Period: **Three Years** Date of Expiration: _____

AND WHEREAS, the Prime Contractor has contracted to warrant said work against leaks and faulty or defective materials and workmanship for the designated Warranty Period; NOW, THEREFORE, the Prime Contractor hereby warrants, subject to the terms and conditions herein set forth, that during the Warranty Period Prime Contractor will at its own cost and expense, make or cause to be made such repairs to or replacements of said work thereof as are necessary to correct faulty and defective work, and as are necessary to maintain said work in a watertight condition. Prime Contractor warrants the said work as required, related and applicable to all Specification Sections and the drawings of the Contract Documents for the **Upstate CASB Roof Replacement project (ADC Project Number: 11338).**

This Warranty is made subject to the following terms and conditions:

1. Warranty covers only repairs made by Prime Contractor to said roofing/waterproofing components of the systems within the scope of work under this contract and does not cover work by others or future defects not directly attributable to work performed.
2. Specifically excluded from this Warranty are damages to the work caused by: a) lightning, hurricane force winds, hailstorm, and other unusual phenomena of the elements; b) fire c) failure of the roofing/waterproofing system resulting from substrate settlement, excessive deflection, deterioration, and decomposition; d) faulty construction of walls not included in Contract Work, copings, vents, equipment supports, and other edge conditions and penetrations not included in the project; e) repeated vapor condensation on the back side of roofing/waterproofing; and f) activity related damages of the roofing/waterproofing by others including construction contractors, maintenance personnel, other persons (including vandalism by non-roofing/waterproofing persons), animals and change in building function which subjects said roofing/waterproofing elements to hazardous chemicals not present during or before Contractor's work whether authorized or unauthorized by Owner. When the work has been damaged by any of the foregoing causes, the Warranty shall be null and void for the specific locations affected until such damage has been repaired by the Owner or by another responsible party as so authorized and designated.
3. Other portions or parts of this building not within the scope of this work are not covered under this Warranty.
4. The Prime Contractor is responsible for damages to the facility caused by the scope of work for this project covered by this Warranty.

5. During the Warranty Period, if the Owner allows alteration of the work by anyone other than the Prime Contractor without written consent of the Prime Contractor, including cutting, patching and maintenance in connection with penetrations, alteration of said flashings, attachment of other work, and positioning of anything on the roofing/waterproofing system, this Warranty shall become null and void at the specific locations upon the date of said alterations, but only to extent said alterations affect work covered by this Warranty. If the Owner engages the Prime Contractor to perform said alterations, the Warranty shall not become null and void, unless the Prime Contractor, prior to proceeding with alteration work, shall have notified the Owner in writing, showing reasonable cause for claim that said alterations would likely damage or deteriorate the work as warranted, thereby reasonably justifying a termination of this Warranty in the area of the altered work.
6. During the Warranty Period, if the original use of the roofing/waterproofing is changed and it becomes used for use other or service more severe than originally specified, this Warranty shall become null and void at the specific locations upon the date of the said change, but only to the extent said change affects work covered by this Warranty.
7. The Owner shall promptly notify the Prime Contractor of observed, known or suspected leaks, defects, failures or deterioration, and shall afford reasonable opportunity for Prime Contractor to inspect the work, and to examine the evidence of such leaks, defects or deterioration regardless of the direct cause or causes.
8. Contractor will promptly inspect reported leaks and if found to be attributed to work performed as part of the scope of this project, make the required repairs within 72 hours of written notification.
 - a. If leaks are found to be from other sources beyond the scope of this warranty, Contractor shall so inform the Owner and make the needed repairs. There will be no charge for this first service call.
 - b. Future service calls and leak repairs not attributed to contractors work will be for Owner's account. Cost of repairs will be at a fair and reasonable rate. Materials required will be at a maximum of cost plus 15%.
 - c. If the Prime Contractor fails to perform repairs in allotted time frame assigned herein this warranty, this warranty will not be voided by the Prime Contractor because of work performed by Others to repair deficient conditions regardless of whether repairs by Others are temporary or permanent in nature.
9. This Warranty is recognized to be the only warranty of the Prime Contractor on said work, and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to him in cases of roofing/waterproofing failure. Specifically, this Warranty shall not operate to relieve the Prime Contractor of his responsibility for performance of the original work, regardless of whether the Contract was a contract directly with Owner, or a subcontract with Owner's General Contractor.
10. If an extended warranty is required during the course of construction, the more stringent requirements shall take precedence.

IN WITNESS WHEREOF, this instrument has been duly executed this _____ day of _____ 20 _____

Prime Contractor's Signature: _____

Typed Name: _____

As Its (position): _____

Date: _____

certification of asbestos-free materials

Project Title: Upstate CASB Roof Replacement
Owner Project No.: H34-9543-JM-A
ADC Project No.: 11338

1. I am authorized to bind _____
(Company's Name by which I am employed).
2. I certify that no materials on this project will contain asbestos. No asbestos-containing materials will be submitted or installed.
3. I recognize that my company's contract is subject to suspension of payments or termination or both, and that my company is responsible for total asbestos abatement of any materials installed by my company.

Company Name

Name and Title of Authorized Representative

Signature

Date

1226 YEAMANS HALL ROAD
HANAHAN, SC 29410
843-566-0161
fax 843-566-0162

ADCENGINEERING.COM

Certification of Asbestos-Free Materials
01 77 15 - 1

11338





AIA[®] Document G704[™] – 2000

Certificate of Substantial Completion

PROJECT:
(Name and address)

Upstate CASB Roof Replacement
Owner Project Number: H34-9543-JM-A

PROJECT NUMBER: ADC 11338

CONTRACT FOR:

CONTRACT DATE:

OWNER:

ARCHITECT:

CONTRACTOR:

FIELD:

OTHER:

TO OWNER:
(Name and address)

University of South Carolina - Upstate
800 University Way
Spartanburg, SC 29303

TO CONTRACTOR:
(Name and address)

PROJECT OR PORTION OF THE PROJECT DESIGNATED FOR PARTIAL OCCUPANCY OR USE SHALL INCLUDE:

The Work performed under this Contract has been reviewed and found, to the Architect's best knowledge, information and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion designated above is the date of issuance established by this Certificate, which is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:

Warranty

Date of Commencement

ARCHITECT

BY

DATE OF ISSUANCE

A list of items to be completed or corrected is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment.

Cost estimate of Work that is incomplete or defective: \$0.00

The Contractor will complete or correct the Work on the list of items attached hereto within Thirty (30) days from the above date of Substantial Completion.

CONTRACTOR

BY

DATE

The Owner accepts the Work or designated portion as substantially complete and will assume full possession at _____ (time) on _____ (date).

OWNER

BY

DATE

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance shall be as follows:

(Note: Owner's and Contractor's legal and insurance counsel should determine and review insurance requirements and coverage.)

Section 01 77 25 Contract Close-Out Checklist

Project: Upstate CASB Roof Replacement

ADC Project Number: 11338

Substantial Completion Date Awarded:		Date Received by ADC Engineering
1.	*Certificate of Substantial Completion – AIA G704 (copy) with Contractor Punchlist <ul style="list-style-type: none"> • Correct Project Information • Correct Date • Signed and Dated 	
2.	*Contractor's Affidavit of Payment of Debts and Claims - AIA G706 (copy) <ul style="list-style-type: none"> • Correct Project Information • Signed and Dated • Notarized and Sealed 	
3.	*Contractor's Affidavit of Release of Liens Form – AIA G706A (copy) <ul style="list-style-type: none"> • Correct Project Information • Signed and Dated • Notarized and Sealed 	
4.	Consent of Surety to Final Payment - AIA G707 <ul style="list-style-type: none"> • Correct Project Information • Signed and Dated • Notarized and Sealed 	
5.	System Description Forms, Reference <ul style="list-style-type: none"> • Provide hard copy of form for each system • Install exterior copy in designated location at facility 	
6.	Manufacturer's Warranties <ul style="list-style-type: none"> • Provide Manufacturer's Warranties as required by the Contract Documents • Dated on or after Substantial Completion date and signed 	
7.	Operation and Maintenance Data <ul style="list-style-type: none"> • Provide any required / necessary operation / maintenance data for systems 	
8.	Three-Year Contractor Warranty <ul style="list-style-type: none"> • Provide Three-Year Contractor Warranty as required by the Contract Documents • Provide USC 1-Year Guarantee • Dated on or after Substantial Completion date and signed 	
9.	ADC Substantial Completion Inspection Punch List <ul style="list-style-type: none"> • All items signed off by the Contractor as completed 	
10.	ADC Final Completion Inspection Punch List <ul style="list-style-type: none"> • All items signed off by the Contractor as completed 	
11.	List of Materials Used by Specifications Section <ul style="list-style-type: none"> • Provide list of materials / manufacturers 	
12.	Supplier – Address and Phone Numbers <ul style="list-style-type: none"> • Provide list of suppliers for systems 	
13.	Asbestos Close-Out Certifications / Receipts <ul style="list-style-type: none"> • Provide Certification of Asbestos-Free Materials, included in the Contract Documents, signed and dated. • Provide Trip Tickets in accordance with Section 02 82 16 	
14.	Record Drawings <ul style="list-style-type: none"> • Provide set of contract drawings with all field changes / modifications shown in red 	
15.	Summary of Unit Prices <ul style="list-style-type: none"> • Provide required documentation of required unit prices • Provide summary balance of all unit prices and remaining balance 	
16.	* Final Change Order (copy) <ul style="list-style-type: none"> • Provide Final Change Order with Unit Prices / Balances included 	
17.	*Final Application for Payment (copy) <ul style="list-style-type: none"> • Provide Final Invoice, including Final Change Order 	

* Note: Provide required original documents under separate correspondence to ADC with copy included within the Close-Out Documents.

SECTION 02 04 00

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

- A. This section establishes general requirements pertaining to cutting, fitting, and patching of the work.
 - 1. Portions of this work require cutting and/or patching components of the existing facility. Plan and coordinate this demolition neatly and safely.
 - 2. Use proper shoring, bracing and protection at all times.
 - 3. Uncover work to provide for installation, inspection, or both, of ill-timed work.
 - 4. Coring and cutting required for installation of new overflow scuppers and replacement of existing drains.
 - 5. Remove all materials, insulation, components and accessories to complete the identified replacements, repairs, and modifications.
 - 6. Remove and replace work not conforming to requirements of the Construction Documents, defective or substandard work.
 - 7. Survey existing conditions, coordinate shutdowns, have qualified craftsmen disconnect necessary plumbing, mechanical and electrical components.
 - 8. Make the several parts fit properly, to accomplish the work within these Construction Documents.
- B. Protect building from inclement weather all times.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. In addition to other requirements specified, upon the Owners request, uncover work to provide for inspection of covered work by the Owner or Owner's representative, and remove samples of installed materials for testing.
- C. Coordinate the requirements and submittals of this section with Section 02 05 00, Demolition and Removal and Section 02 82 16, Engineering Control of Asbestos Containing Materials.

- D. Section 03 52 00: Lightweight Insulating Concrete/Gypsum Deck Repair
- E. Section 06 10 00: Rough Carpentry
- F. Section 07 60 00: Sheet Metal

1.03 REFERENCES

- A. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
 - 1. ANSI/ASSE Z359.1 (2007) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
- B. INTERNATIONAL CODE COUNCIL (ICC):
 - 1. IBC (2009) International Building Code
 - 2. IEBC (2009) International Existing Building Code
- C. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):
 - 1. NFPA 241 (2009) Safeguarding Construction, Alteration, and Demolition Operations
- D. OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION:
 - 1. 29 CFR 1926 – Safety and Health Regulations for Construction
- E. SOUTH CAROLINA DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL (SCDHEC):
 - 1. SCDHEC Regulation 61-107.11, Construction, Demolition and Land-Clearing Debris Landfills
- F. U.S. ARMY CORPS OF ENGINEERS (USACE):
 - 1. EM 385-1-1 (2008; Errata 1-2010; Changes 1-3 2010; Changes 4-6 2011) Safety and Health Requirements Manual

1.04 QUALITY ASSURANCE

- A. Requirements for Structural Work
 - 1. General: Do not cut-and-patch structural work in a manner resulting in a reduction of load-carrying capacity or increase in the load/deflection ratio.
 - 2. Prior to cutting-and-patching the following categories of work, obtain the Owner's approval to proceed with cutting- and-patching as proposed in the submittal by the Contractor:

- a. Timber and nailers.
- b. LWIC / Gypsum fill.
- c. Roof drains/overflow scuppers.
- d. Structural framing, curbs and mechanical equipment.
- e. Structural members (steel, wood or concrete).

B. Operational and Safety Limitations

1. General: Do not cut-and-patch operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in the manner intended or resulting in decreased operational life, increased maintenance, or decreased safety.
2. Prior to cutting-and-patching the following categories of work, and similar categories where directed, obtain the Owner's approval to proceed with cutting-and-patching as proposed in the submittal by the Contractor:
 - a. Sheeting, louvers, shoring and structural bracing.
 - b. Primary operational systems and equipment. (Do not overload system with materials/equipment).
 - c. Water / moisture/vapor/air/smoke barriers, membranes and flashings.
 - d. Noise and vibration control elements and systems.
 - e. Temporarily disconnect, and then re-install immediately the control, communication, mechanical and electrical wiring systems.
 - f. Protection of building and contents.
3. Contractor is required to maintain system to protect occupants on interior from falling debris, dust, etc. during construction. Contractor is also required to clean all areas where dust or debris exists as a result of construction.

C. Appearance Requirements - General

1. Do not cut-and-patch work which is observable on the exterior or exposed in occupied spaces of the building, in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of the cut-and-patch work, both as judged solely by the Owner.
2. Remove and replace work judged by the Owner to be cut-and-patched in a visually unsatisfactory manner.

1.05 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals.
- B. No work will begin until all submittals have been received and approved and Pre-Construction Conference has been completed.
- C. Proposals for Cutting and Patching
 - 1. Submit proposed demolition and removal procedures with the cutting and patching procedures to the Owner for approval before work is started.
 - a. Include description of why cutting-and- patching cannot (reasonably) be avoided, how it will be performed, how structural elements (if any) will be reinforced, products to be used, firms and tradesmen to perform the work, approximate dates of the work, and anticipated results in terms of variations from the work as originally completed (structural, operational, visual and other qualities of significance).
 - b. Where applicable, include cost proposal, suggested alternatives to the cutting and patching procedure proposed, and a description of the circumstances that lead to the need for cutting-and-patching.
 - 2. Approval by Owner to proceed with proposed cutting-and-patching does not waive the right to later require complete removal and replacement of work found to be cut-and-patched in an unsatisfactory manner.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. For replacement of work removed, use materials, which comply with the pertinent sections of these specifications.

2.02 PAYMENT FOR COSTS

- A. Perform all cutting and patching needed to comply with the Construction Documents at no additional cost to the Owner.

PART 3 - EXECUTION

3.01 CONDITIONS

- A. Inspection
 - 1. Inspect existing conditions, including elements subject to movement or damage during sounding, selective demolition, cutting and patching.
 - 2. After uncovering the work, inspect conditions affecting installation of new work.

B. Discrepancies

1. If uncovered conditions are not as anticipated, immediately notify the Consultant/Engineer and secure needed directions.
2. Do not proceed in areas of discrepancy until all such discrepancies have been fully resolved.

C. Protection

1. Protect building from inclement weather at all times.

3.02 PREPARATION

- A. Temporary Support: Provide adequate temporary support for work to be cut, to prevent failure. Do not endanger other work.
- B. Protection: Provide adequate protection of other work during cutting-and-patching, to prevent damage; and provide protection of the work from adverse weather exposure.

3.03 CUTTING AND PATCHING

- A. General: Employ skilled tradesmen to perform cutting- and-patching. Except as otherwise indicated or approved by the Owner, proceed with cutting-and- patching at the earliest feasible time, in each instance, and perform the work promptly.
- B. Cut work by methods least likely to damage work to be retained and work adjoining. Review proposed procedure with original Installer where possible, and comply with his recommendations.
 1. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete work.
 2. Comply with the requirements of Section 02 05 00, Demolition and Removal.
- C. Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.
 1. Where feasible, inspect and test patched areas to demonstrate integrity of work.
- D. Restore exposed finishes of patched areas and, where necessary, extend finish restoration onto retained work adjoining, in a manner which will eliminate evidence of patching.

3.04 UNIT PRICED QUANTITIES

- A. In accordance with Section 01 21 10, Unit Prices and Allowances, the Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.
- B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.
- C. Provide photograph or videotape documentation of repairs.
- D. Locate quantities and show their locations on the applicable drawings.
- E. Provide actual used quantities on each Application for Payment request.

END OF SECTION 02 04 00

SECTION 02 05 00

DEMOLITION AND REMOVAL

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes the demolition of the following products/accessories/systems to complete the work.
1. Function, access and usage of the facility shall be maintained during the demolition and construction process.
 2. Disconnect, relocate, remove and re-install any interior items required to complete the work.
 3. Removal of asbestos containing roofing materials in accordance with Section 02 82 16 Engineering Control of Asbestos Containing Material.
 4. Demolition of the lightweight insulating concrete to complete repairs in accordance with Section 03 52 00, Lightweight Insulating Concrete/Gypsum Deck Repair.
 5. Minor demolition, modifications and additions in accordance with Section 05 55 00, Metal Fabrications.
 6. Demolition of rotted, deteriorated and/or damaged carpentry to permit replacement in accordance with Section 06 10 00, Rough Carpentry.
 7. Removal of the existing system(s) down to the deck to permit installation of insulation in accordance with Section 07 22 00, Thermal Roof Insulation.
 8. Slate repair in accordance with Section 07 31 09, Slate Roofing Repair.
 9. Complete removal of all roofing, insulation, vapor barrier and all associated components and accessories down to the existing deck in accordance with Section 07 53 07, Modified Bitumen Cap Sheet and Felt Roofing System.
 10. Removal of all other sheet metal components and accessories for replacement in accordance with Section 07 60 00, Sheet Metal.
 11. Removal of all sealants on the systems and adjacent wall surfaces for replacement in accordance with Section 07 92 00, Sealants for Roofing and Sheet Metal.
- B. Contractor shall immediately notify the Consultant/Engineer and the Owner, in writing, when conditions are uncovered which will affect or deter completion of the work in accordance with the Contract Documents.

- C. All demolition shall adhere to ANSI, SCDHEC, and OSHA guidelines and as applicable to Section 01 52 05, Safety Requirements.
- D. Safety Plans should include an MSDS list of all products being used as part of a system, but also including substances being used to complete the work (i.e. fuels, solvents, cleaners, etc.). This data should be included within the submittal, and a copy kept on the site.
 - 1. MSDS sheets are required for all products/materials used for this project. Any products with strong or distinct odors must be identified prior to use and submitted to Consultant/Engineer for review and approval.
- E. Building must be protected from inclement weather at all times. Contractor shall have plan and materials (means and methods) to protect area areas during inclement weather.
- F. Unit prices and set quantities are included for various items in accordance with Section 01 21 10, Unit Prices and Allowances and documentation is required accordingly.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. Section 01 52 05: Safety Requirements
- C. Section 02 04 00: Cutting and Patching
- D. Section 02 82 16: Engineering Control of Asbestos Containing Material
- E. Section 03 52 00: Lightweight Insulating Concrete/Gypsum Deck Repair
- F. Section 05 55 00: Metal Fabrications
- G. Section 06 10 00: Rough Carpentry
- H. Section 07 22 00: Thermal Roof Insulation
- I. Section 07 31 09: Slate Roofing Repair
- J. Section 07 53 07: Modified Bitumen Cap Sheet and Felt Roofing System
- K. Section 07 60 00: Sheet Metal
- L. Section 07 92 00: Sealants for Roofing and Sheet Metal.

1.03 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced, and to provide any clarifications for issues not covered within this specification.
- B. AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI):
 - 1. ANSI/ASSE A10.6 (2006) Safety Requirements for Demolition Operations
 - 2. ANSI/ASSE Z359.1 (2007) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
- C. INTERNATIONAL CODE COUNCIL (ICC):
 - 1. IBC (2009) International Building Code
 - 2. IEBC (2009) International Existing Building Code
- D. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):
 - 1. NFPA 241 (2009) Safeguarding Construction, Alteration, and Demolition Operations
- E. OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
 - 1. 29 CFR 1926 – Safety and Health Regulations for Construction
- F. SOUTH CAROLINA DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL (SCDHEC):
 - 1. SCDHEC Regulation 61-107.11, Construction, Demolition and Land-Clearing Debris Landfills
- G. U.S. ARMY CORPS OF ENGINEERS (USACE):
 - 1. EM 385-1-1 (2008; Errata 1-2010; Changes 1-3 2010; Changes 4-6 2011) Safety and Health Requirements Manual

1.04 GENERAL REQUIREMENTS

- A. Do not begin demolition until Demolition plan is approved and authorization is received from the Consultant/ Engineer.
- B. Remove rubbish and debris from the site daily; do not allow accumulation around the building or grounds.
- C. Coordinate sequencing and temporary shutdowns with occupants and owner.

1.05 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals.
- B. No work will begin until all submittals have been received and approved and Pre-Construction Conference has been completed.
- C. Demolition Plan:
 - 1. Submit proposed demolition and removal procedures to the Consultant/Engineer for approval before work is started.
 - 2. Include procedures for careful removal and disposition of materials while function of building is maintained, a disconnection schedule of effected utility services, and a detailed description of methods and equipment to be used for each operation and of the sequence of operations.
 - 3. State safety precautions to be used during conduct of demolition work

1.06 REGULATORY AND SAFETY REQUIREMENTS

- A. Comply with federal, state, and local hauling and disposal regulations.
 - 1. In addition to the requirements of the contract clauses, safety requirements shall conform to ANSI A10.6 and applicable OSHA requirements.
- B. Contractor shall assure compliance with applicable safety and fall protection requirements of federal, state and local regulations throughout performance of work.
- C. The Contractor shall make application to all necessary Building Officials/governing bodies and obtain the required permits for work.

1.07 DUST AND DEBRIS CONTROL

- A. Provide adequate protection of areas which will be subject to demolition debris and dust.
- B. Contractor shall monitor interior and adjacent spaces during the demolition process.
- C. Prevent the spread of dust and debris to the interior portions of the building, to the surrounding grounds, and avoid the creation of a nuisance or hazard in the surrounding area.
- D. Removal of existing work shall be coordinated not to affect current building occupants, pedestrians or function/usage of building.
- E. Do not damage existing substrate or overload assembly with construction traffic, debris or equipment.
- F. Do not damage existing fireproofing, insulation, conduits, lighting, fire protector, etc. on underside of the existing roof deck and framing.

1.08 PROTECTION

A. Traffic Control Signs:

1. Where pedestrian safety is endangered in the area of removal work, use traffic barricades with flashing lights.

B. Ingress/Egress Protection:

1. During the construction period, exits from the building(s) shall not be blocked or impaired without expressed approval of the Agency Life, Safety/Fire Protection Officer
2. Overhead protection and traffic control signs required at all ingress/egress points affected by this work.

C. Existing Work:

1. Protect existing work, which is to remain in place or be reused.
2. The Contractor shall particularly ensure protection to grass, shrubbery and all concrete surfaces.
3. Repair items, which are to remain and which are damaged during performance of the work to their original condition or replace with new.
4. Do not overload existing structural system.
5. Interior:
 - a. The interior of the building shall be protected at all times from dust, debris, materials and equipment associated with the roof construction.
 - b. Safety, the uninterrupted function of the building and the protection of the interior contents shall be maintained at all times.
 - c. Disconnect, relocate, remove and re-install any interior items required to complete the work.

D. Weather Protection:

1. Building must be protected from inclement weather at all times. Contractor shall have plan and materials (means and methods) to protect area areas during inclement weather.
2. For portions of the building to remain, protect building interior and materials and equipment from the weather at all times.

3. When removal of the existing roofing system is accomplished, have the materials and workmen ready to provide adequate and temporary covering of exposed areas during inclement weather and at the end of each day's construction.

E. Facilities:

1. It is the Contractor's responsibility to return the structure and any damaged items to their original condition.
2. Protect all mechanical and electrical services and accessories during the demolition process.
3. Temporary removal/disconnection of utilities during the demolition process; shall be accomplished by qualified craftsman.
4. All interruptions in service shall be coordinated with the Consultant/ Engineer and Owner.
5. All surfaces damaged or stained during the construction process shall be the Contractors responsibility to return to its original condition.

F. Adjacent Surfaces:

1. The Contractor shall return to its original state, any damaged shrubbery, grass, concrete, skylights, equipment or other adjacent surface.

1.09 RELOCATIONS

- A. Perform the removal and reinstallation of the relocated items as indicated with workmen skilled in the trades involved.
- B. Repair items to be relocated, which are damaged or replace damaged items with new undamaged items as approved by the Consultant/Engineer.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 EXISTING FACILITIES

- A. Existing Facilities are to be removed as specified, noted or as necessary to accomplish work.
- B. Roof Replacement:
 1. Remove the entire roofing systems and all related components as required to complete the work.
 2. Damaged substrates and moisture may be trapped within these roof systems.

3. Remove roofing and associated accessories without damage to the adjacent surfaces and roof decks.
 4. See Section 02 82 16, Engineering Control of Asbestos Containing Material.
- C. Roof Repair:
1. Repairs and modifications to the slate roof system are required.
 2. Maintain a protection system for the existing roof system, components and accessories as repairs and modifications are completed.
- D. Substrates:
1. Repair any deteriorated substrates and replace to provide a smooth, level, surface per Section 03 52 00, Lightweight Insulating Concrete Gypsum Deck Repair.
- E. General M/E/P Work Specific to Roof Replacement
1. Disconnect and remove all rooftop mechanical and electrical equipment as necessary to affect roof work in the areas and reinstall upon completion of the work in the area to minimize down time. Provide for extension and modification of service. Utilities, interior components and all connections as necessary to accommodate new heights and locations.
 2. Any lightning protection, cables, wires, satellite or microwave dishes, antennas and rooftop mechanical, electrical or electronic components shall be temporarily disconnected and reconnected by qualified craftsman. This includes roof areas, walls, flashings and adjacent wall areas.
 3. Extend / raise all penetrations, curbs, mechanical, electrical and plumbing components to a minimum 8 inches above the finished roof surface. Provide for extension and modification of service, utilities, interior components and all connections as necessary to accommodate new heights and locations.
 4. The underside of the deck and interior of walls has fixtures and attachments. Contractor shall have qualified craftsman remove and reinstall all affected items related to the completion of the scope of this project.
 5. Ensure any M/E/P systems which require a specific contractor to complete the work (i.e. Johnson Controls, Honeywell, Trane, Etc.) are included in the Bid.

3.02 DISPOSITION OF MATERIALS

- A. Title of Materials:
1. Except where specified in other sections, all materials and equipment removed, and not reused, shall become the property of the Contractor and shall be removed from the job site.

2. Title to the materials resulting from demolition, and materials and equipment removed, is vested in the Contractor upon approval by the Consultant/Engineer of the Contractor's demolition and removal procedures, and authorization by the Consultant/Engineer to begin demolition.
3. The Owner will not be responsible for the condition or loss of, or damage to, such property after notice to proceed.

B. Reuse of Materials and Equipment:

1. Remove and store materials and equipment to be reused to prevent damage, and reinstall as the work progresses.

3.03 CLEANUP

- A. Remove and transport debris and rubbish in a manner that will prevent spillage on streets or adjacent areas.
- B. Limit to 3/8 cubic yard capacity buggies or other conveyances used on the roofs to transport debris to chute locations.

3.04 UNIT PRICED QUANTITIES

- A. In accordance with Section 01 21 10, Unit Prices and Allowances, the Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.
- B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.
- C. Provide photograph or videotape documentation of repairs.
- D. Locate quantities and show their locations on the drawings.
- E. Provide actual used quantities on each Application for Payment request.

END OF SECTION 02 05 00

SECTION 02 82 16

ENGINEERING CONTROL OF ASBESTOS CONTAINING MATERIALS

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide for the proper removal and disposal of all asbestos containing roofing materials (ACRM) in the roof system base flashings, mastics, asphaltic coatings and cements of roof areas A, C and D. These materials are currently “non friable.” The Contractor shall adhere to all aspects of this section, with every effort not to render these materials “friable” in the removal and disposal process. Materials rendered friable shall be removed in accordance with the further criteria of this section at no additional costs.
- B. If these materials are rendered friable by the Contractor, the work covered by this section includes the handling and control of asbestos containing materials and describes some of the resultant procedures and equipment required to protect workers, the environment and occupants of the building or area, or both, from contact with airborne asbestos fibers. The work also includes the disposal of any asbestos containing materials generated by the work. More specific operational procedures shall be outlined in the Asbestos Hazard Abatement Plan called for elsewhere in this specification. The materials required for removal and disposal are non friable, asbestos containing roofing materials. However, during demolition and removal, powered cutting machines will render the material friable. Roofing materials must be removed in accordance with the requirements of state and local regulatory agency, its regulations and 29 CFR 1926.1101. The method of removal must be selected that provides the best control during abatement at the most reasonable cost.
- C. Based on core samples and site inspection made by ADC Engineering, Inc. and the attached report, removal of all base flashings, mastics, asphaltic coatings and cements as non-friable asbestos containing roof materials is required.
- D. Contractor shall adhere to all SCDHEC requirements including “Notice of Demolition” and “Notice of Asbestos Renovation Project”.
- E. Provide temporary repairs to all areas until work is completed. Building shall remain watertight and protected from the elements at all times.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. Section 02 04 00: Cutting and Patching
- C. Section 02 05 00: Demolition and Removal

**Engineering Control of Asbestos Containing Materials
02 82 16-1**

1.03 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced, and to provide any clarifications for issues not covered within this specification.
- B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
1. ANSI Z88.2 (1992) Respiratory Protection
 2. ANSI Z9.2 (2001) Fundamentals Governing the Design and Operation of Local Exhaust Ventilation Systems
- C. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):
1. ASTM C 732 (2006) Aging Effects of Artificial Weathering on Latex Sealants
 2. ASTM D 1331 (2001) Surface and Interfacial Tension of Solutions of Surface-Active Agents
 3. ASTM E 119 (2000a) Standard Test Methods for Fire Tests of Building Construction and Materials
 4. ASTM E 1368 (2003) Visual Inspection of Asbestos Abatement Projects
 5. ASTM E 1494 (2002) Encapsulants for Spray- or Trowel-Applied Friable Asbestos-Containing Building Materials
 6. ASTM E 2356 (2010) Standard Practice for Comprehensive Building Asbestos Surveys
 7. ASTM E 736 (2000) Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members
 8. ASTM E 84 (2011) Standard Test Method for Surface Burning Characteristics of Building Materials
 9. ASTM E 96 / E 96 M (2010) Standard Test Methods for Water Vapor Transmission of Materials
- D. CODE OF FEDERAL REGULATIONS (CFR)
1. 29 CFR 1926.103 - Respiratory Protection
 2. 29 CFR 1926.51 – Sanitation
 3. 29 CFR 1926.200 - Accident Prevention Signs and Tags
 4. 29 CFR 1926.59 - Hazard Communication

5. 29 CFR 1926.1101 - Asbestos, Tremolite, Anthophyllite, Actinolite
 6. 40 CFR 61-SUBPART A - General Provisions
 7. 40 CFR 61-SUBPART M - National Emission Standard for Asbestos
 8. 40 CFR 763 - Asbestos Containing Material in Schools
- E. ENVIRONMENTAL PROTECTION AGENCY (EPA)
1. EPA 560/5-85-024 - Guidance for Controlling Asbestos Containing Materials in Buildings
- 1.04 GOVERNMENT DIRECTIVES (GD)
- A. ND OPNAVINST 5100.23 (Rev. D) Navy Occupational Safety and Health (NAVOSH) Program Manual
 - B. UNDERWRITERS LABORATORIES INC. (UL)
 1. UL 586 (Latest Edition) High-Efficiency, Particulate, Air Filter Units
 - C. U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:
 - D. Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite: Final Rules Title 29, Part 1910, and Part 1926, Section 1101 of the Code of Federal Regulations.
 - E. Respiratory Protection: Title 29, Part 1910, Section 134 of the Code of Federal Regulations.
 - F. Construction Industry: Title 29, Part 1926, of the Code of Federal Regulations.
 - G. Access of Employee Exposure and Medical Records: Title 29, Part 1910, Section 2 of the Code of Federal Regulations.
 - H. Specifications for Accident Prevention Signs and Tags: Title 29, 1910, Section 145 of the Code of Federal Regulations.
 - I. South Carolina Department of Health and Environmental Control (SCDHEC)
 1. Notification for Demolition Form.
 2. Notification for Renovation Form.
 3. Specific Guidelines:
 - a. Regulation 61-86.1 Standards of Performance for Asbestos Abatement Operations

- b. Roofing ACM Survey protocols and work practice procedures, published by AHP Research, Inc.
 - c. Asbestos Containing Materials (ACM)
 - d. Asbestos Containing Roofing Materials (ACRM)
4. S.C. Code of Laws Title 44 Chapter 87 Asbestos Abatement License:
- a. SECTION 44-87-20. License required for each asbestos abatement project.
 - 1) Asbestos abatement entities performing asbestos projects shall, before beginning work on a project, obtain an asbestos abatement license from the department. The license must be obtained for each project.

1.05 DEFINITIONS

- A. ACM: Asbestos Containing Materials.
- B. ACRM: Asbestos Containing Roofing Materials, Non-friable.
- C. Amended Water:
 - 1. Water containing a wetting agent or surfactant with a maximum surface tension of 29 dynes per centimeter when tested in accordance with ASTM D 1331.
- D. Area Sampling:
 - 1. Sampling of asbestos fiber concentrations, which approximates the concentrations of asbestos in the theoretical breathing zone but is not actually collected in the breathing zone of an employee.
- E. Asbestos:
 - 1. The term asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, and actinolite asbestos and any of these minerals that has been chemically treated or altered. Materials are considered to contain asbestos if the asbestos content of the material is determined to be at least one percent.
- F. Asbestos Control Area:
 - 1. That area where asbestos removal operations are performed which is isolated by physical boundaries, which assist in the prevention of the uncontrolled release of asbestos dust, fibers, or debris.

- G. Asbestos Fibers:
1. Those fibers having an aspect ratio of at least 3:1 and longer than 5 micrometers as determined by National Institute for Occupational Safety and Health (NIOSH) Method 7400.
- H. Asbestos Permissible Exposure Limit:
1. 0.1 fibers per cubic centimeter of air as an 8-hour time weighted average measured in the breathing zone as defined by 29 CFR 1926.1101 or other Federal legislation having legal jurisdiction for the protection of workers health.
- I. Background:
1. The ambient airborne asbestos concentration in an uncontaminated area as measured prior to any asbestos hazard abatement efforts. Background concentrations for other (contaminated) areas are measured in similar but asbestos free locations.
- J. Contractor:
1. The Contractor is that individual, or entity under contract to the Owner to perform the herein listed work.
- K. Encapsulation:
1. The abatement of an asbestos hazard through the appropriate use of chemical encapsulants.
- L. Encapsulants:
1. Specific materials in various forms used to chemically or physically entrap asbestos fibers in various configurations to prevent these fibers from becoming airborne. There are four types of encapsulants as follows, which must comply with performance requirements as specified herein.
 - a. Removal Encapsulant (can be used as a wetting agent)
 - b. Bridging Encapsulant (used to provide a tough, durable surface coating to asbestos containing material)
 - c. Penetrating Encapsulant (used to penetrate the asbestos containing material encapsulating all asbestos fibers and preventing fiber release due to routine mechanical damage)
 - d. Lock-Down Encapsulant (used to seal off or "lock-down" minute asbestos fibers left on surfaces from which asbestos containing material has been removed).

- M. Friable Asbestos Material:
1. One percent asbestos containing material that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.
- N. Glovebag Technique:
1. Those asbestos removal and control techniques put forth in 29 CFR 1926.1101 Appendix G.
- O. HEPA Filter Equipment:
1. High efficiency particulate air (HEPA) filtered vacuum and/or exhaust ventilation equipment with a filter system capable of collecting and retaining asbestos fibers. Filters shall retain 99.97 percent of particles 0.3 microns or larger as indicated in UL 586.
- P. Owner Consultant (OC):
1. That qualified person, employed directly by the Owner to monitor, sample, inspect the work or in some other way advise the Owner. The OC is normally a private consultant, but can be an employee of the Owner.
- Q. Negative Pressure Enclosure (NPE):
1. That engineering control technique described as a negative pressure enclosure in 29 CFR 1926.1101.
- R. Non-friable Asbestos Material:
1. Material that contains asbestos in which the fibers have been immobilized by a bonding agent, coating, binder, or other material so that the asbestos is well bound and will not normally release asbestos fibers during any appropriate use, handling, storage or transportation. It is understood that asbestos fibers may be released under other conditions such as demolition, removal, or mishap. This includes asbestos containing roofing materials, unless and noted otherwise.
- S. Personal Sampling:
1. Air sampling, which is performed to determine asbestos fiber concentrations within the breathing zone of a specific employee, as performed in accordance with 29 CFR 1926.1101.
- T. Private Qualified Person (PQP):
1. That qualified person hired by the Contractor to perform the herein listed tasks.

U. Qualified Person (QP):

1. A Registered Architect, Professional Engineer, Certified Industrial Hygienist, consultant or other qualified person who has successfully completed training and is therefore accredited under a legitimate State Model Accrediation Plan as described in 40 CFR 763 as a Building Inspector, Contractor/Supervisor Abatement Worker, and Asbestos Project Designer; and has successfully completed the National Institute of Occupational Safety and Health (NIOSH) 582 course "Sampling and Evaluating Airborne Asbestos Dust" or equivalent. The QP must be qualified to perform visual inspections as indicated in ASTM E 1368. The QP shall be appropriately licensed in the State of South Carolina.

V. TEM:

1. Refers to Transmission Electron Microscopy.

W. Time Weighted Average (TWA):

1. The TWA is an 8-hour time weighted average airborne concentration of asbestos fibers.

X. Wetting Agent:

1. A chemical added to water to reduce the water's surface tension thereby increasing the water's ability to soak into the material to which it is applied. An equivalent wetting agent must have a surface tension of at most 29 dynes per centimeter when tested in accordance with ASTM D 1331.

1.06 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals.
- B. No work will begin until all submittals have been received and approved and Pre-Construction Conference has been completed.
- C. For projects involving non-friable, asbestos containing roofing materials, to be removed and disposed of without rendering them friable. The following submittals are required.
 1. Submit a detailed plan for the proper removal of non-friable asbestos containing roofing materials, and planned action if materials are rendered friable.
 2. Copy of SCDHEC Notification for Demolition Form.
 3. Copy of SCDHEC Notification for Asbestos Renovation Project.
 4. Submit written evidence that the landfill for disposal is approved for asbestos disposal by the state and local regulatory agency. Submit to the

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owner, waste shipment records, prepared in accordance with Federal regulations, signed and dated by an agent of the landfill, certifying containing materials delivered to the landfill within three (3) days of delivery. In those States that require a hazardous waste manifest the contractor shall submit, within three (3) days, signed copies of such to the owner.

- D. For projects involving friable asbestos containing materials or non-friable materials, which are rendered friable by the contractor. The following requirements shall be met.
1. Submit a detailed plan for the safety precautions such as lockout, tagout, tryout, fall protection, and confined space entry procedures and equipment and work procedures to be used in the removal and demolition of materials containing asbestos. The plan, not to be combined with other hazard abatement plans, shall be prepared, signed, and sealed by the PQP. Provide a Table of Contents for each abatement submittal, which shall follow the sequence of requirements in the contract. Such plan shall include but not be limited to the precise personal protective equipment to be used including, but not limited to, respiratory protection, type of whole-body protection and if the location of asbestos control areas including clean and dirty areas, buffer zones, showers, storage areas, change rooms, removal method, interface of trades involved in the construction, sequencing of asbestos related work, disposal plan, type of wetting agent and asbestos sealer to be used, locations of local exhaust equipment, planned air monitoring strategies, and a detailed description of the method to be employed in order to control environmental pollution. The plan shall also include (both fire and medical emergency) response plans. The Asbestos Hazard Abatement Plan must be approved in writing prior to starting any asbestos work. The Contractor, Asbestos Hazard Control Supervisor, and PQP shall meet with the Owner prior to beginning work, to discuss in detail the Asbestos Hazard Abatement Plan, including work procedures and safety precautions. Once approved by the Owner, the plan will be enforced as if an addition to the specification. Any changes required in the specifications as a result of the plan; shall be identified specifically in the plan to allow for free discussion, and approval by the Owner prior to starting work.
 2. Landfill Approval:
 - a. Submit written evidence that the landfill for disposal is approved for asbestos disposal by the state and local regulatory agency. Submit to the Owner, waste shipment records, prepared in accordance with Federal regulations, signed and dated by an agent of the landfill, certifying the amount of asbestos materials delivered to the landfill, within 3 days after delivery. In those States that require a hazardous waste manifest the Contractor shall submit, within 3 days, signed copies of such to the Owner.

3. Employee Training:

- a. Submit certificates, prior to the start of work but after the main abatement submittal, signed by each employee indicating that the employee has received training in the proper handling of materials and wastes that contain asbestos in accordance with 40 CFR 763; understands the health implications and risks involved, including the illnesses possible from exposure to airborne asbestos fibers; understands the use and limits of the respiratory equipment to be used; and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment as indicated in 29 CFR 1926.1101 on an initial and annual basis. Certificates; shall be organized by individual worker not grouped by type of certification. Post appropriate evidence of compliance with the training requirements of 40 CFR 763.

4. Testing Laboratory:

- a. Submit the name, address, and telephone number of each testing laboratory selected for the sampling, analysis, and reporting of airborne concentrations of asbestos fibers along with certification that each laboratory is American Industrial Hygiene Association (AIHA) accredited and that persons counting the samples have been judged proficient by current inclusion on the AIHA Asbestos Analysis Registry (AAR) and successful participation of the laboratory in the Proficiency Analytical Testing (PAT) Program. Where analysis to determine asbestos content in bulk materials or transmission electron microscopy is required, submit evidence that the laboratory is accredited by the National Institute of Science and Technology (NIST); under National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos analysis.

5. Private Qualified Person Documentation:

- a. Submit the name, address, and telephone number of the Private Qualified Person (PQP) selected to prepare the Asbestos Hazard Abatement Plan, direct monitoring and training, and documented evidence that the PQP has successfully completed training in and is accredited and where required is certified as, a Building Inspector, Contractor/Supervisor Abatement Worker, and Asbestos Project Designer as described by 40 CFR 763 and has successfully completed the National Institute of Occupational Safety and Health (NIOSH) 582 course "Sampling and Evaluating Airborne Asbestos Dust" or equivalent. The PQP shall be appropriately licensed in the State of South Carolina.

6. Medical Certification:

- a. Provide a written certification for each worker and supervisor, signed by a licensed physician indicating that the worker and supervisor has

met or exceeded all of the medical prerequisites listed herein and in 29 CFR 1926.1101 and 29 CFR 1926.103 as prescribed by law. Submit certificates prior to the start of work but after the main abatement submittal.

7. Respiratory Protection Program:
 - a. Submit a written program manual or operating procedure including methods of compliance with regulatory statutes.
8. Field Test Reports:
 - a) Air sampling results
 - b) Pressure differential recordings for local exhaust system.
 - c) Asbestos disposal quantity report.
 - d) Encapsulation test patches.
 - e) Air Sampling Results: Complete fiber counting and provide results to the PQP and OC for review within 16 hours of the "time off" of the sample pump. Notify the Owner immediately of any airborne levels of asbestos fibers in excess of the acceptable limits. Submit sampling results to the Owner and the affected Contractor employees where required by law within 3 working days, signed by the testing laboratory employee performing air sampling, the employee that analyzed the sample, and the PQP and OC. Notify the Contractor and the Owner immediately of any variance in the pressure differential which could cause adjacent unsealed areas to have asbestos fiber concentrations in excess of 0.01 fibers per cubic centimeter or background whichever is higher. In no circumstance shall levels exceed 0.1 fibers per cubic centimeter.
9. Records:
 - a. Notifications
 - b. Rental equipment
 - c. Respirator program records
 - d. Permits and licenses
 - e. Notifications:
 - 1) Notify the Owner and appropriate Government agencies in writing 14 working days prior to the start of asbestos work as indicated in applicable laws, ordinances, criteria, rules, and regulations.

- f. Rental Equipment:
 - 1) Provide a copy of the written notification to the rental company concerning the intended use of the equipment and the possibility of asbestos contamination of the equipment.
- g. Respirator Program Records:
 - 1) Submit records of the respirator program as required by ANSI Z88.2, 29 CFR 1926.103, and 29 CFR 1926.1101.

10. Manufacturer's Catalog Data:

- a. Local exhaust equipment
- b. Vacuums
- c. Respirators
- d. Pressure differential automatic recording instrument.
- e. Amended water
- f. Glovebags
- g. Material Safety Data Sheets (MSDS) for all materials proposed for transport to the project site.
- h. Encapsulants

11. Statements:

- a. Asbestos hazard abatement plan
- b. Testing laboratory
- c. Private qualified person documentation
- d. Landfill approval
- e. Employee training
- f. Medical certification requirements
- g. Waste shipment records and if applicable exemption report
- h. Respiratory Protection Program
- i. Hazardous waste manifest

12. Certificates:
 - a. Vacuums
 - b. Water filtration equipment
 - c. Ventilation systems
 - d. Other equipment used to contain airborne asbestos fibers.
 - e. Chemical encapsulant sealers.
 - f. Show compliance with ANSI Z9.2 by providing manufacturers' certifications.

1.07 REQUIREMENTS

A. Permits, Licenses, and Notifications:

1. Obtain necessary permits and licenses from the state and local regulatory agencies to perform roofing demolition or removal. Notify the state and local regulatory agencies in writing fourteen (14) working days prior to roof demolition or renovation for projects specified in the applicable regulations. Provide state and local regulatory agencies with a written request for disposal prior to transporting non-friable waste from the facility site.
2. Obtain and complete all necessary SCDHEC forms and notification.

B. Environment, Safety and Health Compliance:

1. In addition to detailed requirements of this specification, comply with those applicable laws, ordinances, criteria, rules, and regulations of Federal, State, regional, and local authorities regarding handling, storing, transporting, and disposing of asbestos waste materials. Comply with the applicable requirements of the current issue of 29 CFR 1926.1101, 40 CFR 61-SUBPART A, 40 CFR 61-SUBPART M, and ND OPNAVINST 5100.23. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting the 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 Government shall apply. The following laws, ordinances, criteria, rules and regulations regarding removal, handling, storing, transporting and disposing of asbestos materials apply.
2. Adhere to all OSHA guidelines specific to asbestos containing materials and asbestos containing roofing materials.

C. Training:

1. Train all personnel involved in the asbestos control work in accordance with United States Environmental Protection Agency (USEPA) Asbestos Hazard Emergency Response Act (AHERA) training criteria or State training

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criteria whichever is more stringent. The Contractor shall document the training by providing: dates of training, training entity, course outline, names of instructors, and qualifications of instructors upon request by the Owner. Furnish each employee with respirator training and fit testing administered by the PQP as required by 29 CFR 1926.1101. Fully cover engineering and other hazard control techniques and procedures.

D. Medical Requirements:

1. Provide medical requirements including but not limited to medical surveillance and medical record keeping as listed in 29 CFR 1926.1101.

E. Medical Examinations:

1. Before exposure to airborne asbestos fibers, provide workers with a comprehensive medical examination as required by 29 CFR 1926.1101 or other pertinent State or local directives. This requirement must have been satisfied within the 12 months prior to the start of work on this contract. The same medical examination shall be given on an annual basis to employees engaged in an occupation involving asbestos and within 30 calendar days before or after the termination of employment in such occupation. Specifically identify x-ray films of asbestos workers to the consulting radiologist and mark medical record jackets with the word "ASBESTOS."

2. Medical Records:

- a. Maintain complete and accurate records of employees' medical examinations, medical records, and exposure data for a period of 50 years after termination of employment and make records of the required medical examinations and exposure data available for inspection and copying to: The Assistant Secretary of Labor for Occupational Safety and Health (OSHA), or authorized representatives of them, and an employee's physician upon the request of the employee or former employee.

F. Respiratory Protection Program:

1. Establish and implement a respirator program as required by ANSI Z88.2, 29 CFR 1926.1101, and 29 CFR 1926.103. Submit a written description of the program to the Owner.

G. Asbestos Hazard Control Supervisor:

1. The Contractor shall be represented on site by a supervisor, trained using the model Contractor accreditation plan as indicated in the Federal statutes for all portions of the herein listed work.

H. Hazard Communication:

1. Adhere to all parts of 29 CFR 1926.59 and provide the Owner with a copy of the Material Safety Data Sheets (MSDS) for all materials brought to the site.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 ASBESTOS CONTAINING ROOFING MATERIAL (NON-FRIABLE)

- A. The asbestos containing roofing materials for this project are currently non-friable, as noted in the “Summary” of this section, and the contractor shall remove and dispose of these materials in accordance with SCDHEC requirements.
- B. If these materials are rendered friable during this project, the contractor shall adhere to the further requirements of this section at no additional costs.

3.02 ASBESTOS CONTAINING ROOFING MATERIAL (FRIABLE)

- A. If friable materials are identified in the “Summary” of this section, or the contractor renders the non-friable materials friable, then the removal process shall be modified to meet the complete requirements of this section.

3.03 EQUIPMENT

- A. At all times, provide the Owner or the Owner's Representative, with at least two complete sets of personal protective equipment as required for entry to and inspection of the asbestos control area. Provide equivalent training to the Owner or a designated representative as provided to Contractor employees in the use of the required personal protective equipment. Provide manufacturer's certificate of compliance for all equipment used to contain airborne asbestos fibers.

1. Respirators:

- a. Select respirators from those approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.

2. Respirators for Handling Asbestos:

- a. Provide personnel engaged in pre-cleaning, cleanup, handling, and/or demolition of asbestos materials with respiratory protection as indicated in 29 CFR 1926.1101 and 29 CFR 1926.103.

3. Exterior Whole Body Protection:

a. Outer Protective Clothing:

- 1) Provide personnel exposed to asbestos with disposable "non-breathable," whole body outer protective clothing, head coverings, gloves, and foot coverings. Provide disposable plastic or rubber gloves to protect hands. Cloth gloves may be worn inside the plastic or rubber gloves for comfort, but shall not be used alone. Make sleeves secure at the wrists, make foot coverings secure at the ankles, and make clothing secure at the neck by the use of tape.

b. Work Clothing:

- 1) Provide cloth work clothes for wear under the outer protective clothing and foot coverings and either dispose of or properly decontaminate them as recommended by the PQP after each use.

c. Personal Decontamination Unit:

- 1) Provide a temporary, negative pressure unit with a separate decontamination locker room and clean locker room with a shower that complies with 29 CFR 1926.51 (f)(4)(ii) through (V) in between for personnel required to wear whole body protective clothing. Provide two separate lockers for each asbestos worker, one in each locker room. Keep street clothing and street shoes in the clean locker. HEPA vacuum and remove asbestos contaminated disposable protective clothing while still wearing respirators at the boundary of the asbestos work area and seal in impermeable bags or containers for disposal. HEPA vacuum and remove asbestos contaminated reusable protective clothing while still wearing respirators at the boundary of the asbestos work area and seal in two impermeable bags, label outer bag as asbestos contaminated waste, and transport for decontamination. Do not wear work clothing between home and work. Locate showers between the decontamination locker room and the clean locker room and require that all employees shower before changing into street clothes. Collect used shower water and filter with approved water filtration equipment to remove asbestos contamination. Dispose of filters and residue as asbestos waste. Discharge clean water to the sanitary system. Dispose of asbestos contaminated work clothing as asbestos contaminated waste or properly decontaminate as specified in the Contractor's Asbestos Hazard Abatement Plan. Decontamination units shall be physically attached to the asbestos control area. Build both a personnel decontamination

unit and an equipment decontamination unit onto and integral with each asbestos control area.

d. Eye Protection:

- 1) Provide goggles to personnel engaged in asbestos abatement operations when the use of a full face respirator is not required.

4. Warning Signs and Labels:

- a. Provide bilingual warning signs printed in English and Spanish at all approaches to asbestos control areas. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to all asbestos materials, scrap, waste, debris, and other products contaminated with asbestos.

b. Warning Sign:

- 1) Provide vertical format conforming to 29 CFR 1926.200, and 29 CFR 1926.1101 minimum 20 by 14 inches displaying the following legend in the lower panel:

<u>Legend</u>	<u>Notation</u>
Danger	one inch Sans Serif Gothic or Block
Asbestos	one inch Sans Serif Gothic or Block
Cancer and Lung Disease Hazard	1/4-inch Sans Serif Gothic or Block
Authorized Personnel Only	1/4-inch Gothic
Respirators and Protective Clothing are Required in this Area	1/4-inch Gothic

Spacing between lines shall be at least equal to the height of the upper of any two lines.

c. Warning Labels:

5. Provide labels conforming to 29 CFR 1926.1101 of sufficient size to be clearly legible, displaying the following legend:

**Engineering Control of Asbestos Containing Materials
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DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
BREATHING ASBESTOS DUST MAY
CAUSE SERIOUS BODILY HARM

6. Tools:

- a. Vacuums shall be leak proof to the filter and equipped with HEPA filters. Filters on vacuums shall conform to ANSI Z9.2 and UL 586. Do not use power tools to remove asbestos containing materials unless the tool is equipped with effective, integral HEPA filtered exhaust ventilation system. Remove all residual asbestos from reusable tools prior to storage or reuse.

7. Rental Equipment:

- a. If rental equipment is to be used, furnish written notification to the rental agency concerning the intended use of the equipment and the possibility of asbestos contamination of the equipment.

3.04 WORK PROCEDURE

- A. Removal, disposal, and documentation shall adhere to SCDHEC and all applicable government regulations, for non-friable asbestos containing roofing materials.
- B. Procedures shall be modified as follows if friable, or rendered friable. Perform asbestos related work in accordance with 29 CFR 1926.1101, 40 CFR 61-SUBPART M, and as specified herein. Use wet removal procedures and techniques. Personnel shall wear and utilize protective clothing and equipment as specified herein. Eating, smoking, drinking, chewing gum, tobacco, or applying cosmetics shall not be permitted in the asbestos work or control areas. Personnel of other trades not engaged in the removal and demolition of asbestos containing material shall not be exposed at any time to airborne concentrations of asbestos unless all the personnel protection and training provisions of this specification are complied with by the trade personnel. Seal all roof top penetrations, except plumbing vents, prior to asbestos roofing work.

1. Protection of Existing Work to Remain:

- a. Perform work without damage or contamination of adjacent work. Where such work is damaged or contaminated as verified by Owner using visual inspection 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. This includes inadvertent spill of dirt, dust, or debris in which it is reasonable to conclude that asbestos may exist. When these spills occur, stop work immediately. Then clean up the spill. When satisfactory visual inspection and air sampling results are obtained from the PQP work may proceed at the discretion of the Owner.

2. Removal Procedures:

- a. Perform asbestos roof renovation and demolition in accordance with 29 CFR 1926.1101 and applicable state and local regulations. Use wet methods or wetting agents, use vacuum cleaners equipped with HEPA filters to collect all ACM or PACM dust and debris or by gently sweeping and wiping up wet debris at cut line. Wet methods shall not be used, as safety hazard will be created. Roofing materials shall be removed in an intact state to the extent feasible. If cutting machines are used, they shall be continuously misted at the cut point. All dust and debris generated from powered cutters shall be immediately vacuumed at the cut line. Dust and debris generated shall be immediately bagged or placed in covered containers. Asbestos waste shall remain wet while on the roof and shall be removed from the roof prior to the end of each work shift. Debris shall be bagged or placed in a closed container immediately upon lowering to the ground. Roof heating and ventilation air intake sources shall be isolated.

3. Procedures:

- a. Preparation of Test Patches:
- b. Install three test patches as indicated. Use airless spray at the lowest pressure and as recommended by the manufacturer. Follow exactly the manufacturer's instructions for thinning recommendations, application procedures and rates. Curing time shall be not less than five days or that recommended by the manufacturer, whichever is more. A test patch shall be 9 square feet in size.

4. Encapsulation Procedures:

- a. Preparation of Test Patches:
 - 1) Install three test patches as indicated. Use airless spray at the lowest pressure and as recommended by the encapsulant manufacturer. Follow exactly the manufacturer's instructions for thinning recommendations, application procedures and rates. Curing time shall be not less than five days or that recommended by the manufacturer, whichever is more. A test patch shall be 9 square feet in size.

- b. Field Testing:
 - 1) Field test the encapsulation test patches in accordance with ASTM E 1494, paragraph "Required Field Test," in the presence of the Owner. Keep a written record of the testing procedures and test results. Upon successful testing of the encapsulant, submit a signed statement to the Owner certifying that the encapsulant is suitable for installation on the particular asbestos containing material.
- c. Large-Scale Application:
 - 1) Apply encapsulant using the same equipment and procedures as employed for the test patches. Keep the encapsulant material stirred to prevent settling. Keep a clean work area. Change pre-filters in the ventilation equipment as soon as they appear clogged by encapsulant aerosol or pressure differential drops below 0.02 Hg.

5. Air Sampling:

- a. Sampling of airborne concentrations of asbestos fibers shall be performed in accordance with 29 CFR 1926.1101 and as specified herein. Sampling performed in accordance with 29 CFR 1926.1101 shall be performed by the PQP. Sampling performed for environmental and quality control reasons shall be performed by the PQP. Unless otherwise specified, use NIOSH Method 7400 for sampling and analysis. Monitoring may be duplicated by the Owner at the discretion of the Owner. If the air sampling results obtained by the Owner differ from those results obtained by the Contractor, the Owner will determine which results predominate.
- b. Sampling During Asbestos Work:
 - 1) The PQP shall provide personal monitoring as required by 29 CFR 1926.1101. The NC shall provide daily area air sampling in the work area, downwind at the perimeter of the regulated area and inside the building at areas beneath the roof removal work. If any area or personal samples exceed 0.01 fibers per cubic centimeter, stop all work, correct the condition causing the increase, and notify the Owner immediately.

6. Site Inspection:

3.05 CLEAN-UP AND DISPOSAL

- A. Housekeeping procedures for non-friable ACRM shall maintain a clean site, with temporary protection and removal and disposal procedures in accordance with SCDHEC.

- B. Housekeeping procedures shall be modified if friable or rendered friable.
 - 1. Essential parts of asbestos dust control are housekeeping and clean-up procedures. Maintain surfaces of the asbestos control area free of accumulations of asbestos fibers. Give meticulous attention to restricting the spread of dust and debris; keep waste from being distributed over the general area. Use HEPA filtered vacuum cleaners. **DO NOT BLOW DOWN THE SPACE WITH COMPRESSED AIR.** When asbestos removal is complete, all asbestos waste is removed from the work-site, and final clean-up is completed, the Owner will attest that the area is safe before the signs can be removed.
- C. Title to materials for non-friable and friable materials.
 - 1. All waste materials, 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.
- D. Disposal of Asbestos:
 - 1. Non-friable ACRM materials shall be collected, labeled, and disposed of in accordance with SCDHEC requirements.
 - 2. Procedure for disposal of friable materials:
 - a. Collect asbestos waste, asbestos contaminated water, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing which may produce airborne concentrations of asbestos fibers and place in sealed fiber-proof, waterproof, non-returnable containers (e.g. double plastic bags 6 mils thick, cartons, drums or cans). Wastes within the containers must be adequately wet in accordance with 40 CFR 61-SUBPART M. Affix a warning and Department of Transportation (DOT) label to each container including the bags or use at least 6 mils thick bags with the approved warnings and DOT labeling preprinted on the bag. The name of the waste generator and the location at which the waste was generated shall be clearly indicated on the outside of each container. Prevent contamination of the transport vehicle (especially if the transport vehicle is a rented truck likely to be used in the future for non-asbestos purposes). These precautions include lining the vehicle cargo area with plastic sheeting (similar to work area enclosure) and thorough cleaning of the cargo area after transport and unloading of asbestos debris is complete. Dispose of waste asbestos material at an Environmental Protection Agency (EPA) or State-approved asbestos landfill off Government property. For temporary storage, store sealed impermeable bags in asbestos waste drums or skids. An area for interim storage of asbestos waste-containing drums, or skids, will be assigned by the Owner, or his authorized representative. Procedure for hauling and disposal shall comply with 40 CFR 61-SUBPART M, State, regional,

and local standards. Sealed plastic bags may be dumped from drums into the burial site unless the bags have been broken or damaged. Damaged bags shall remain in the drum and the entire contaminated drum shall be buried. Uncontaminated drums may be recycled. Workers unloading the sealed drums shall wear appropriate respirators and personal protective equipment when handling asbestos materials at the disposal site.

b. Asbestos Disposal Quantity Report:

- 1) Direct the PQP to record and report, to the Owner, the amount of asbestos containing material removed and released for disposal.
- 2) Deliver the report for the previous day at the beginning of each day shift with amounts of material removed during the previous day reported in linear feet or square feet as described initially in this specification and in cubic feet for the amount of asbestos containing material released for disposal.
- 3) Allow the OC to inspect, record and report the amount of asbestos containing material removed and released for disposal on a daily basis.
- 4) While performing asbestos engineering control work, the Contractor shall be subject to on-site inspection by the Owner who may be assisted by or represented by safety or 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. All related costs including standby time required to resolve the violation shall be at the Contractor's expense.

END OF SECTION 02 82 16



9711 Southern Pine Boulevard
 Charlotte, NC 28273
 704-940-1830 Fax 704-565-4929
 NVLAP ID 102075-0

POLARIZED LIGHT MICROSCOPY
 Performed by EPA 600/R-93/116 Method

Asbestos Analysis Summary

Client Name ADC Engineering Inc
Client Job USCU CASB 11338

1226 Yeamans Hall Rd.
 Hanahan SC 29406

Date Received 6/28/2012
Date Analyzed 7/3/2012

Job Number 1355-01-689

Lab ID:	Sample #:	Appearance	Comments	Asbestos %/Type	Non-Asbestos Fibrous %/Type	Non-Fibrous %/Type
12-6899	R1	BLACK FIBROUS		ND	15 GLASS	85 OTHER
12-6900	R2	BLACK FIBROUS		ND	15 GLASS	85 OTHER
12-6901	R3	BLACK FIBROUS		ND	15 GLASS	85 OTHER
12-6902	R6	BLACK FIBROUS		ND	45 CELLULOSE	55 OTHER

Analyzed by: Jane Wasilewski
 Additional Comments:

Jane Wasilewski
 Laboratory Manager

For heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. ND = None Detected (Asbestos Not Present In Representative Sample). RCF= (Refractory Ceramic Fiber) The results pertain only to the sample identification above. The sample may not be fully representative of the larger material in question. This sheet may not be reproduced except with permission from SME, Inc. This report may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Although Polarized Light Microscopy (PLM/Dispersion Staining) (Method EPA 600/R-93/116) is the specified method for analysis of bulk material samples for asbestos under the EPA Asbestos Hazard Emergency Response Act, there have been reports that this method may not identify asbestos when fiber sizes are extremely small or if they are bound in a resinous material. Such materials include floor tile, mastic and asphaltic roofing. Currently, reanalysis by Transmission Electron Microscopy (TEM) to verify results of <1% or "None Detected" for these materials is recommended.

Job Number 1355-01-689

Lab ID:	Sample #:	Appearance	Comments	Asbestos %/Type	Non-Asbestos Fibrous %/Type	Non-Fibrous %/Type
12-6903	F1	SILVER/BLACK FIBROUS		15 CHRYSOTILE	15 CELLULOSE	70 OTHER
12-6904	F2	SILVER/BLACK FIBROUS		10 CHRYSOTILE	20 GLASS 10 CELLULOSE	60 OTHER
12-6905	F3	SILVER/BLACK FIBROUS		20 CHRYSOTILE	10 CELLULOSE 5 GLASS	65 OTHER
12-6906	F4	SILVER/BLACK FIBROUS		25 CHRYSOTILE	15 GLASS 10 CELLULOSE	50 OTHER
12-6907	F5	SILVER/BLACK FIBROUS		20 CHRYSOTILE	15 GLASS 10 CELLULOSE	55 OTHER

Analyzed by: Jane Wasilewski
Additional Comments:


Jane Wasilewski
Laboratory Manager

For heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. ND = None Detected (Asbestos Not Present In Representative Sample), RCF= (Refractory Ceramic Fiber) The results pertain only to the sample identification above. The sample may not be fully representative of the larger material in question. This sheet may not be reproduced except with permission from SME, Inc. This report may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Although Polarized Light Microscopy (PLM/Dispersion Staining) (Method EPA 600/R-93/116) is the specified method for analysis of bulk material samples for asbestos under the EPA Asbestos Hazard Emergency Response Act, there have been reports that this method may not identify asbestos when fiber sizes are extremely small or if they are bound in a resinous material. Such materials include floor tile, mastic and asphaltic roofing. Currently, reanalysis by Transmission Electron Microscopy (TEM) to verify results of <1% or "None Detected" for these materials is recommended.



BULK SAMPLE CHAIN OF CUSTODY RECORD POLARIZED LIGHT MICROSCOPY PERFORMED BY EPA 600/R-93/116 METHOD

135-01-687

PROJECT NO. 11338	PROJECT NAME USCU CASB	RELINQUISHED BY Ms. Nancy Stracener	DATE 06/22/12	TIME 8:30 am	RECEIVED BY: <i>Jena Sporn</i>	DATE 06/28/12		
FACILITY USCU College of Arts & Sciences Building		RELINQUISHED BY:	DATE	TIME	RECEIVED BY:			
SAMPLER(S) Daniel Atwell		RELINQUISHED BY:	DATE	TIME	RECEIVED BY:			
SAMPLE #	LAB NUMBER	DATE ANALYZED	ANALYSTS INITIALS	ASBESTOS + N/D	ARCHIVE NUMBER	DATE ARCH	ARCHIVER INITIALS	SPECIAL INSTRUCTIONS
R1	12-6879							
R2	6900							
R3	01							
R6	02							
F1	03							
F2	04							
F3	05							
F4	06							
F5	12-6907							
<input type="checkbox"/> Same Day <input type="checkbox"/> 24 Hour <input checked="" type="checkbox"/> 48 Hour <input type="checkbox"/> 3 - 5 Day <input type="checkbox"/> 6 - 10 Day		ALL SAMPLES WILL BE DISPOSED OF AFTER ANALYSIS UNLESS OTHERWISE REQUESTED						

By signing below, I warrant that I am authorized to enter into this agreement for the client named below, and that I authorize the above analysis subject to the terms and conditions on the reverse hereof.

AUTHORIZED BY *Nancy E Stracener* 06/22/12 Admin. Mgr. (DATE & TITLE)
 PRINT NAME Nancy E Stracener

This agreement is governed by the terms and conditions on the reverse side hereof.
 Analysis charges shall be as included in S&ME, Inc.'s fee schedule in effect at the time of the analysis.

CLIENT INFORMATION	INVOICE	SEND COPIES OF RESULTS TO
Client Name: ADC Engineering, Inc.	ATTN Ms. Donna Yaw	Name, Dept.: Ms. Nancy Stracener nancys@adcengineering.com
Client PO#: 11338 (B)		Co.: ADC Engineering, Inc.
Address: 1226 Yeamans Hall Road		Address: 1226 Yeamans Hall Road
City, State, Zip: Hanahan, SC 29410		City, State, Zip: Hanahan, SC 29410
Phone: (843) 566-0161	FAX: (843) 566-0162	Phone: (843) 566-0161 FAX: (843) 566-0162

SECTION 03 52 00

LIGHTWEIGHT INSULATING CONCRETE / GYPSUM DECK REPAIRS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes repair to cast-in-place lightweight insulating concrete/gypsum (LWIC) fill on Roof Areas A, C, and D.
- B. Work includes inspection, fastener pull tests and repair of the LWIC/Gypsum.
- C. Repair deck where abandoned penetrations have been removed. Ensure underside of deck at exposed locations matches existing conditions.
- D. Repairs to form decking are also included.
- E. A set quantity is required for lightweight insulating concrete/gypsum deck repairs. This quantity is to be included in the Base Bid as listed on the Unit Prices Attachment. Any quantity above or below the set quantity amount shall result in an add or deduct to the Contract Sum based on the unit price provided.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. Section 02 04 00: Cutting and Patching
- C. Section 02 05 00: Demolition and Removal
- D. Section 05 55 00: Metal Fabrications

1.03 REFERENCES

- A. AMERICAN CONCRETE INSTITUTION (ACI):
 - 1. ACI 318 (2005) Building Code Requirements for Structural Concrete and Commentary
 - 2. ACI RPMN (2008) Concrete Repair Manual
 - 3. ACI SP-2 (2007) Manual of Concrete Inspection Tenth Edition
- B. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):
 - 1. ASTM A185/A185M (2006) Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
Lightweight Insulating Concrete / Gypsum Deck Repairs

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2. ASTM C138/C138M (2001) Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
3. ASTM C 150 (2005) Standard Specification for Portland Cement
4. ASTM C 260 (2006) Standard Specification for Air-Entraining Admixtures for Concrete
5. ASTM C 28/C28M (2005) Standard Specification for Gypsum Plasters
6. ASTM C 317 (2000) Standard Specification for Gypsum Concrete
7. ASTM C 33 (2003) Standard Specification for Concrete Aggregates
8. ASTM C 332 (1999) Lightweight Aggregates for Insulating Concrete
9. ASTM C 35 (2005) Standard Specification for Inorganic Aggregates for Use in Gypsum Plaster
10. ASTM C 495 (1999) Standard Test Method for Compressive Strength of Lightweight Insulating Concrete

C. INTERNATIONAL CODE COUNCIL (ICC):

1. IBC (2009) International Building Code
2. IEBC (2009) International Existing Building Code

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals.
- B. No work will begin until all submittals have been received and approved and Pre-Construction Conference has been completed.
- C. Product data describing products and methods of mixing and application instructions.
- D. Material Safety Data Sheets (MSDS): Submit Material Safety Data Sheets with each specification section and include with Safety Plan in accordance with Section 01 52 05, Safety Requirements.

1.05 QUALITY ASSURANCE

- A. Insulating Concrete/Gypsum Supplier: Regularly engaged in production of lightweight insulating concrete/gypsum materials.
- B. Insulating Concrete/Gypsum Applicator: Regularly engaged and properly equipped for application of lightweight insulating concrete/gypsum, and as acceptable by aggregate producer.

Lightweight Insulating Concrete / Gypsum Deck Repairs
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1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original undamaged packages or acceptable bulk containers.
- B. Store packaged materials to protect them from elements or physical damage.
- C. Do not use cement that shows indications of moisture damage, caking, or other deterioration.

1.07 JOB CONDITIONS

- A. Do not place lightweight insulating concrete/gypsum when ambient temperature is at or below freezing (32 deg F, 0 deg C).
- B. When air temperature has fallen or is expected to fall below 40 deg F (4 deg C), heat water to a maximum 120 deg F (48 deg C) before mixing to attain lightweight concrete/gypsum at point of placement with temperature of 50 deg F (10 deg C) min. and 80 deg F (27 deg C) max.
- C. Do not place lightweight insulating concrete/gypsum on surfaces covered with standing water, snow, or ice.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Use LWIC materials to repair existing LWIC decks and Gypsum materials for Gypsum decks.
 - 1. Light Weight Insulating Concrete
 - a. Portland Cement: ASTM C 150, Type I or Type III.
 - b. Mineral Aggregate: ASTM C 332, Group I.
 - c. Sand Aggregate: ASTM C 33.
 - d. Air-Entraining Admixture: ASTM C 260.
 - 2. Gypsum Concrete
 - a. Mill formulated complying with ASTM C 317, Class A, 500 psi minimum compressive strength.
 - b. Density of not more than 60 lbs/cu. Ft.
 - c. Calcined Gypsum – ASTM C 28
 - d. Aggregates – ASTM C 35
 - e. Wood chips or Shavings

3. Reinforcing Mesh: Welded wire fabric, ASTM A 185, galvanized.
4. Water: Clean, potable

2.02 DESIGN MIX

- A. General: Design lightweight insulating concrete mix to produce the following minimum physical properties.
 1. Wet Density at Point of Placement: Minimum 40 pcf, when tested in accordance with ASTM C 138.
 2. Oven-Dry Density: 22 to 30 pcf, when tested in accordance with ASTM C 495.
 3. Compressive Strength: Minimum 300 psi, when tested in accordance with ASTM C 495.
- B. The Portland cement to aggregate by volume ratio shall be 1:3.5, and a special mix ratio for non-venting substrates.
 1. A minimum compressive strength of 300 psi.
- C. Provide for minimum fastener pull out of 40 pounds per fastener.
- D. Do not exceed maximum air content recommended by aggregate manufacturer.
- E. Use minimum amount of water necessary to produce a workable mix.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Lightweight concrete/gypsum decks suitable for re-roofing will be firm, hard and free of debris and loose dirt.
 1. Areas where roof leaking has been severe and long term may lose their integrity. These areas must be completely replaced with lightweight concrete.
- B. Conduct a minimum of six base sheet fastener pull tests for each roof area. LWIC substrate shall provide for minimum pull out of 40 pounds per fastener. Areas needing replacement due to deterioration must be completely cleaned of all loose, unsound concrete/gypsum.
 1. The area to be patched should be wetted down prior to placement of new concrete.
 2. Repair areas shall also meet the above pull test criteria.

Lightweight Insulating Concrete / Gypsum Deck Repairs

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3.02 PLACEMENT

- A. Patched areas should be allowed to cure sufficiently so that the material can be walked on without leaving footprints.
 - 1. This may necessitate covering the area to prevent water entry into the building.
- B. In some cases, lightweight decks may exhibit some surface spalling after the existing roof is removed. Generally, this surface spalling can be swept clean for application of the new roof.
 - 1. No remedial work is generally needed in this case.
- C. Place lightweight insulating concrete in accordance with manufacturer's instructions, using equipment and procedures to avoid segregation of mix and loss of air content.
 - 1. Deposit and screed in a continuous operation until an entire panel or section of roof area is completed.
 - 2. Do not vibrate or work mix except for screeding or floating.
 - 3. Place lightweight insulating concrete to fill voids of damaged and removed areas and to provide a level plane for roof system application.
 - 4. Leave top surface in acceptable condition to receive subsequent roofing application.
- D. Provide temporary protection of removable waterproof covering to prevent direct exposure to moisture if roofing application is not started immediately after completion of curing.

3.03 DEFECTIVE WORK

- A. General: Refinish, or remove and replace lightweight insulating concrete/gypsum surfaces that are too rough to receive finish roofing, or where physical properties do not meet specified requirements, as determined by the Owner's Representative.

3.04 UNIT PRICED QUANTITIES

- A. In accordance with Section 01 21 10, Unit Prices and Allowances, the Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.
- B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.

- C. Provide photograph or videotape documentation of repairs.
- D. Locate quantities and show their locations on the applicable drawings.
- E. Provide actual used quantities on each Application for Payment request.

END OF SECTION 03 52 00

SECTION 05 55 00

METAL FABRICATIONS

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes required covering of small deck openings where penetrations have been removed permanently.
- B. This section also includes furnishing and installing a new aluminum Bilco roof scuttle or approved equal to match existing size and configuration.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. Section 02 04 00: Cutting and Patching
- C. Section 02 05 00: Demolition and Removal
- D. Section 03 52 00: Lightweight Insulating Concrete Gypsum Deck Repair
- E. Section 07 60 00: Sheet Metal
- F. Section 07 92 00: Sealants for Roofing and Sheet Metal

1.03 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced, and to provide any clarifications for issues not covered within this specification.
- B. ALUMINUM ASSOCIATION, INC. (AA):
 - 1. AA 46 (1978) Standards for Anodized Architectural Aluminum
 - 2. AA DAF-45 (2003) Designation System for Aluminum Finishes
- C. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC):
 - 1. AISC 325 (2005e13) Manual of Steel Construction
 - 2. AISC 326 (2002) Detailing for Steel Construction
- D. AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI):
 - 1. ANSI A10.3 (1995) Safety Requirements for Powder Actuated Fastening Systems.
 - 2. ANSI A14.3 (2002) Standard for Fixed Ladders and Safety Requirements

E. AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE)

1. ASSE A10.3 (2006) Operations -- Safety Requirements for Powder Actuated Fastening Systems

F. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):

1. ASTM A 123 / A 123 M (2009) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
2. ASTM A 36/A 36M (2005) Standard Specification for Carbon Structural Steel
3. ASTM A 778 (2001) Standard Specification for Welded, Unannealed Austenitic Stainless Steel Tubular Products
4. ASTM B 108 (2006) Standard Specification for Aluminum-Alloy Permanent Mold Castings
5. ASTM B 209 (2010) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
6. ASTM B 221 (2006) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
7. ASTM B 26/B 26M (2005) Standard Specification for Aluminum-Alloy Sand Castings

G. INTERNATIONAL CODE COUNCIL (ICC):

1. IBC (2009) International Building Code
2. IEBC (2009) International Existing Building Code

H. NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM):

1. NAAMM MFM (1988) Metal Finishes Manual

I. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA):

1. 1910.27 - Fixed Ladders

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01 33 00, Submittals.

B. No work will begin until all submittals have been received and approved and Pre-Construction Conference has been completed.

- C. Manufacturer's Catalog Data:
 - 1. Roof Scuttle
 - 2. Cover plates and frames
- D. Certificates of Compliance
 - 1. Roof Scuttle
- E. Material Safety Data Sheets (MSDS): Submit Material Safety Data Sheets with each specification section and include with Safety Plan in accordance with Section 01 52 05, Safety Requirements.

1.05 DELIVERY AND STORAGE

- A. Protect from corrosion, deformation and other types of damage.
- B. Store items in an enclosed area free from contact with soil and weather.
- C. Contractor shall replace and remove damaged items with new items.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Products shall conform to the respective reference specifications and standards and to the requirements specified herein.
- B. Plates:
 - 1. Steel, where shown, shall conform to ASTM A 36/A 36M. Unless otherwise approved, steel shall match existing but not be less than 3/16 inch.
- C. Anchors and Fasteners:
 - 1. Where exposed, shall be of the same material, color and finish as the metal to which applied.
 - 2. Applicable and designed for intended use.
- D. Aluminum Alloy Products:
 - 1. Shall conform to ASTM B 209 for sheet plate, ASTM B 221 for extrusions and ASTM B 26 or ASTM B 108 for castings, as applicable.
 - 2. Provide aluminum extrusions at least 1/8-inch thick and aluminum plate or sheet at least 0.050 inch thick.
- E. Round supports, stainless steel or galvanized pipe with caps for open end conditions.

2.02 EPOXY PAINTS

- A. Primer: Two component, rust inhibitive, fast drying, quick recoatability, catalyzed polyamide epoxy.
 - 1. Minimum one coat, dry film thickness of 4.0 mil minimum.
 - 2. Primer to contain a minimum 65% by volume of nonvolatile film-forming solids.
- B. Coating System: - Two component, high solids, epoxy-polyamide coating.
 - 1. Minimum two coats, total dry film thickness of 8.0 mil minimum.
 - a. Intermediate coating to contain a minimum 65% by volume of nonvolatile film-forming solids.
 - 2. Topcoat to contain a minimum 60% by volume of nonvolatile film-forming solids.
- C. Total System: - Three-coat epoxy-polyamide system shall not exceed a dry mil thickness of 15.
- D. Brushes: - Use brushes best suited for the material applied.
- E. Rollers: - Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.

2.03 DISSIMILAR MATERIALS

- A. Where dissimilar metals, as defined by MIL STD 889, are in contact, or where aluminum is in contact with concrete, mortar, masonry, wood or absorptive materials subject to wetting, protect the surfaces with a coat of bituminous paint, a coat of varnish conforming to FS TT-V-51 or a coat of zinc chromate primer conforming to FS TT-P-645 or FS TT-P-664 to prevent galvanic or corrosive action.

PART 3 - EXECUTION

3.01 FABRICATION

- A. Fabrication shall be by mechanics skilled in the trade and in accordance with the manufacturer's directions.
- B. Metalwork shall be well formed to shape and size with sharp lines, angels and true curves.
- C. All work shall be fabricated to allow for expansion and contraction of materials.
- D. Provide welding and bracing of adequate strength and durability, with tight, flush joints, dressed smooth and clean.

3.02 MEASUREMENTS

- A. Before fabrication, provide necessary field measurements and verify all measurements.

3.03 METAL SURFACES

A. Surface Preparation:

1. Clean steel and iron work by power wire brushing or other approved manual or mechanical means, for removal of rust, loose paint, scale and deleterious substances.
2. Wash cleaned surfaces, which become contaminated with rust, dirt, oil, grease, or other foreign matter, with solvents until thoroughly clean.

- B. All metal surfaces shall be clean and free from mill scale, flake rust and rusts pitting; well formed and finished to shape and size with sharp lines, angles and smooth surfaces.

- C. Provide a primer and 2 coats of epoxy-based paint to all exposed metal/steel surfaces.

3.04 CONSTRUCTION

- A. Joints exposed to weather shall be formed to exclude water.

3.05 FASTENING

- A. Provide the necessary rabbets, lugs and brackets so that the work can be assembled in a neat and substantial manner.

- B. Holes for bolts and screws shall be drilled.

- C. Joints exposed to the weather shall be formed to exclude water.

- D. Conceal fastenings where possible.

3.06 SHOP FABRICATION

- A. Fabrication and assembly shall be done in the shop to the greatest extent possible.

- B. Coordinate fabricated lengths of continuous elements with field installation procedures, and practical length requirements.

3.07 ROOF COVER PLATES AND FRAMES

- A. Fabricate cover plates of shop painted steel, in accordance with the following table:

<u>OPENING</u>	<u>PLATE THICKNESS</u>
12" x 12"	1/8"
18" x 18"	1/8"
24" x 24"	1/4"
36" x 36"	1/4"

Metal Fabrications
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- B. Support cover plates on existing roof with 4-inch perimeter bearing.
- C. Fasten plates at four corners with 3/8-inch diameter by 3-inch embedment wedge-type anchor bolt into existing concrete slab.
- D. Provide insulation, the same thickness to the underside of the plate.
- E. Provide a finished surface to match existing on the underside of all exposed deck locations.

3.08 PIPE SUPPORTS

- A. Unless required otherwise, a minimum 2" galvanized pipe, round pipe, welded to a minimum 12" x 12", 1/4" galvanized plate.
- B. Pipe length shall provide for a minimum 12" above the finished roof and as noted on the details.
- C. Unless required otherwise, a minimum 3" x 3" angle, 1/4" thick shall be used on top of pipes when support racks for mechanical equipment is required.
- D. Contractor shall secure to substrate and provide any additional secondary framing to support M/E/P equipment.

3.09 ANCHORAGE, FASTENINGS AND CONNECTIONS

- A. Anchorage
 - 1. Provide anchorage for fastening work securely in place.
 - 2. Set anchors in concrete as the work progresses and space not more than 2 feet on centers unless specified or indicated otherwise.
 - 3. Sizes, kinds and spacings of anchors not indicated or specified shall be as necessary for the purpose, as approved.
 - 4. Anchorage not otherwise specified or indicated includes:
 - a. Slotted inserts, expansion shields and powder-driven fasteners, when approved for concrete.
 - b. Toggle bolts and through bolts for masonry.
 - c. Machine and carriage bolts for steel.
 - d. Through bolts, lag bolts and screws for wood.
 - 5. Provide inserts of suitable and approved types where required for support or anchorage of equipment and finish construction.

- a. Inserts shall be gray or malleable iron castings or galvanized steel unless indicated or specified otherwise.
 - b. Slotted inserts shall be of types required to engage with anchors.
6. Except where specified or indicated otherwise, anchors and anchor bolts in exterior walls shall be zinc-coated and all other anchors and anchor bolts shall be heavily coated with bituminous paint.

B. Anchors and Connecting Members

1. Provide in concrete or masonry as the work progresses to avoid unnecessary cutting and drilling.
2. Cut, fit and drill as necessary so all materials are properly set in place and to permit engaging work to be properly installed.

C. Shop Cleaning and Painting

1. Re-coat damaged surfaces using surface preparation, treatment, primer and paint that was applied to the adjacent surfaces upon completion of work.

D. Touch Up Galvanizing

1. Re-coat damaged galvanize surfaces in accordance with ASTM A 778.

3.10 UNIT PRICED QUANTITIES

- A. In accordance with Section 01 21 10, Unit Prices and Allowances, the Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.
- B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.
- C. Provide photograph or videotape documentation of repairs.
- D. Locate quantities and show their locations on the applicable drawings.
- E. Provide actual used quantities on each Application for Payment request.

END OF SECTION 05 55 00

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes all new carpentry, which is required at all perimeter locations, terminations and penetrations to complete the work unless specifically noted otherwise.
- B. All treated / waterproof carpentry shall have underlayment to provide separation with sheet metal.
- C. Removal of all loose nails / fasteners, replacement with new wood screws and the random addition of fasteners is included.
- D. A set quantity is required for rough carpentry. This quantity is to be included in the Base Bid as listed on the Unit Prices Attachment. Any quantity above or below the set quantity amount shall result in an add or deduct to the Contract Sum based on the unit price provided.
 - 1. Unless specifically noted otherwise, contractor may assume existing nailers/carpentry can be reused. Any carpentry found to be damaged or deteriorated, shall be replaced based on the quantities listed on the Unit Prices Attachment.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. Section 02 04 00: Cutting and Patching
- C. Section 02 05 00: Demolition and Removal
- D. Section 07 22 00: Thermal Roof Insulation
- E. Section 07 31 09: Slate Roofing Repair
- F. Section 07 60 00: Sheet Metal

1.03 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced, and to provide any clarifications for issues not covered within this specification.

- B. AMERICAN FOREST & PAPER ASSOCIATION (AF&PA):
 - 1. AFPA T101 (2001) National Design Specification for Wood Construction
- C. AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE):
 - 1. ASCE 7 (2010) Minimum Design Loads for Buildings and Other Structures
- D. AMERICAN WOOD PRESERVERS BUREAU (AWPB):
 - 1. AWPB LP22-80 - Standard for Softwood Lumber, Timber, and Plywood Pressure Treated with Waterborne Preservatives for Ground Contact Use
- E. AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA):
 - 1. AWPA C1 (2003) All Timber Products – Preservative Treatment by Pressure Processes
 - 2. AWPA C2 (2003) Lumber, Timber, Bridge Ties and Mine Ties- Preservative Treatment by Pressure Processes
 - 3. AWPA C9 (2003) Plywood – Preservative Treatment by Pressure Process
 - 4. AWPA M2 (2001) Inspection of Treated Wood Products
 - 5. AWPA M6 (2007) Brands Used on Forest Products
- F. APA – THE ENGINEERED WOOD ASSOCIATION (APA):
 - 1. APA E30 (2005) Engineered Wood Construction Guide
 - 2. APA PRP-108 (2002) Performance Standards and Policies
 - 3. APA PS 1 (1995) Voluntary Product Standard for Construction and Industrial Plywood
 - 4. APA PS 2 (2004) Voluntary Product Standard for Wood-Based Structural-Use Panels
- G. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):
 - 1. ASTM C1396 / C1396M (2011) Standard Specification for Gypsum Board
 - 2. ASTM F 1667 (2003) Driven Fasteners: Nails, Spikes, and Staples
- H. FACTORY MUTUAL ENGINEERING AND RESEARCH (FM):
 - 1. FM DS 1-49 (2000) Perimeter Flashing

- I. INTERNATIONAL CODE COUNCIL (ICC):
 - 1. IBC (2009) International Building Code
 - 2. IEBC (2009) International Existing Building Code
- J. SOUTHERN PINE INSPECTION BUREAU (SPIB):
 - 1. SPIB 1003 (2002) Southern Pine Inspection Bureau Grading Rules
- K. U.S. DEPARTMENT OF COMMERCE (DOC):
 - 1. DOC/NIST PS1 (1995) Construction and Industrial Plywood with Typical APA Trademarks

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals.
- B. No work will begin until all submittals have been received and approved and Pre-Construction Conference has been completed.
- C. Certificate of Pressure Treatment
- D. Certificate of Grade
 - 1. Drawing Requirements for rough carpentry indicate materials, details of constructions, methods of fastening, and erection details. Submit drawings for all proposed modifications of structural members. Do not proceed with modifications until the submittal has been approved.
- E. Certificate of fastener types of CA, ACQ or MCQ wood treatment.
- F. Layout Plan for Carpentry
- G. Material Safety Data Sheets (MSDS): Submit Material Safety Data Sheets with each specification section and include with Safety Plan in accordance with Section 01 52 05, Safety Requirements.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials to site in an undamaged condition.
- B. Storage: Carefully store materials in enclosed trailer providing proper ventilation, drainage, and protection against dampness.
- C. Handling: Remove defective and damaged materials and provide new materials.
- D. Ensure grade marks are present on all lumber.

1.06 MOISTURE CONTENT

A. General:

1. Maximum moisture content of 19%.
2. Air or kiln treated lumber after treatment.

B. Moisture Content:

1. Maximum moisture content of wood products shall be as follows at the time of delivery to the job site and stored properly to eliminate any further exposure.
 - a. All lumber and boards - 19% maximum.
 - b. Materials other than lumber or moisture content shall be in accordance with referenced standard.

1.07 PRESERVATIVE TREATMENT

- A. All lumber and timber shall be treated in accordance with AWPA C1 and AWPA C2 or approved equal. Treatment shall be a minimum .25 for above grade use. This includes nailers, edge strips, crickets, curbs, blocking, and cants for new roofing system.
- B. Equivalent treatment methods / products, such as Alkaline Copper Quaternary (ACQ), Micronized Copper Quaternary (MCQ) or Copper Azole (CA) will be considered under the substitution process. Substitution request must address the proposed fasteners / types that will be used.
- C. Any wood, nailers or other rough carpentry using Copper Azole (CA), Alkaline Copper Quaternary (ACQ) or Micronized Copper Quaternary (MCQ) treatment will require verification of the following:
 1. Separation of aluminum/galvalume sheet metal from the rough carpentry.
 2. Type of fasteners acceptable for attachment into these woods (such as stainless steel).
 - a. Fasteners for wood to wood connectors.
 - b. Fasteners thru metal into wood.
- D. All wood shall be air or kiln dried after treatment.
- E. Plywood Sheathing – AWPA – C1 and AWPA C9.

PART 2 - PRODUCTS

2.01 LUMBER

- A. Framing Lumber: Nailers, framing edge strips, crickets, curbs and cants.
- B. Grade of Lumber shall be No. 2 or better.

2.02 PLYWOOD

- A. Plywood to repair existing plywood or used in combination with nailers shall match in thickness and shall be exterior grade and pressure treated material.
- B. Plywood used with nailers shall be sandwiched between nailers.
- C. Plywood for overlayment shall be a minimum 5/8 inch exterior grade and pressure treated.
- D. Plywood shall conform to DOC PS 1, APA PRP-108 or APA PS 2, Grade C-D or sheathing grade with exterior glue. Sheathing for roof and walls without corner bracing of framing shall have a span rating of 16/0 or greater for supports 16 inches on center and a span rating of 24/0 or greater for supports 24 inches on center.

2.03 FASTENERS

- A. Fasteners shall be compatible with the materials being fastened and shall provide for secure, firm attachment.
- B. Exposed fasteners shall have domed head with integral metal washer and rubber gasket.
- C. Fasteners shall be hot dipped galvanized steel, stainless steel, bronze or copper as a minimum. Wood treatment may require specific type of fasteners.
- D. Only stainless steel fasteners shall be used to connect dissimilar metals.

2.04 ROUGH HARDWARE

- A. Unless otherwise indicated or specified, rough hardware shall be of the type and size necessary for the project requirements. Sizes, types, and spacing of fastenings of manufactured building materials shall be as recommended by the product manufacturer unless otherwise indicated or specified. Rough hardware exposed to the weather or embedded in or in contact with preservative treated wood, exterior masonry, or concrete walls or slabs shall be zinc-coated.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Conform to NFP WCD1 unless otherwise indicated or specified.

- B. Fit framing lumber accurately to the required lines and levels to match existing nailers, which shall be removed.
- C. Set nailers with their crown edge up.

3.02 WOOD ROOF NAILERS, EDGE STRIPS, CURBS AND CANTS

A. General:

- 1. Provide sizes and configurations to match existing conditions at edge perimeters, curbs, and expansion joints.
- 2. Thicknesses to match insulation thicknesses and minimum 2 x 6, unless specifically noted otherwise.
- 3. If multiple layers, attach each layer independently and minimum 1 1/2 inch thickness at top, when applicable.

B. Raise all penetrations a minimum of 8 inches above the finished roof.

C. Wood Blocking Attachment

1. Concrete Substrate

- a. A minimum 1/2 inch diameter anchor bolt with minimum 1 inch diameter washer properly embedded into structural concrete and recessed into wood blocking.
- b. Anchors should be staggered if blocking is wider than 6 inches.
- c. Anchors should be not more than 48 inches on center and no less than three (3) anchors per 8 feet section of carpentry. At corners reduced to 24 inches on center.

2. Steel Substrate

- a. A minimum 3/4 inch diameter bolt tapped into a structural member or into bar joists between 48 inches on center.
- b. Attachment to metal deck requires #12 fastener 12 inches on center and 6 inches on center at corners.
- c. The corner shall be defined as a minimum of 10 feet and increased based on ASCE 7 guidelines.
- d. This may require attachment to structural framing.

3. If other substrate/edge conditions exist, the Contractor shall provide attachment to resist 250 pounds per square linear foot in all directions and increased by 100% at corners.
 - a. The corner shall be defined as a minimum of 10 feet and increased based on ASCE 7 guidelines.
 - b. This may require attachment to structural framing.

D. Nailers/Fasteners

1. A 1/4 inch gap between nailers is required.
2. Pre-drilled holes for attachment.
3. Nails used to secure multiple nailers should be long enough to penetrate the base wood blocking 1 1/4 inch. A fastener shall be placed 3 inches from each end and double rows spaced 24 inches on center and staggered is required.
4. Joints in nailers shall be staggered in multiple layer applications and shall have interlocked corners.
5. Nails should be installed at angles.
6. Nailers used to raise curbs of mechanical units, skylights and other penetrations shall be installed level.

E. Nailer Configurations

1. Match nailer thicknesses with insulation thicknesses including tapered insulation.
2. Stack nailers with joints staggered and plywood sandwiched between nailers.
3. Contractor may elect to build a 'box' configuration or 'stud wall' assembly with voids filled with insulation in lieu of a 'stacked' configuration.

3.3 UNIT PRICED QUANTITIES

- A. In accordance with Section 01 21 10, Unit Prices and Allowances, the Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.
- B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.
- C. Provide photograph or videotape documentation of repairs.
- D. Locate quantities and show their locations on the applicable drawings.
- E. Provide actual used quantities on each Application for Payment request.

END OF SECTION 06 10 00

Rough Carpentry
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SECTION 07 22 00

THERMAL ROOF INSULATION

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes the installation of thermal and tapered insulation as required or necessary to complete specified work.
- B. Based on the deck type, the following is required: field, perimeter and corners will be defined in accordance with FM requirements.
 - 1. Light Weight Insulating Concrete/Gypsum Deck – Mechanically fasten a base sheet to adhere to FM-1A-90 requirements, with required increases at perimeters and corners.
- C. A minimum R-value of 20 is required in accordance with ASHRAE 90.1, 2007.
 - 1. First layer of insulation on all areas shall be a 1.5 inch thick polyisocyanurate.
 - 2. Final layer of insulation on all areas shall be a 3/4-inch perlite, fully adhered.
- D. For Roof Areas A, C and D, the primary slope shall be provided using a tapered polyisocyanurate roof insulation system shall be installed over the first layer of base insulation, and shall have a minimum 1/8 inch per foot tapered slope. The minimum start thickness of the tapered board shall be 1/2 inch and coordinated with Section 06 10 00, Rough Carpentry to ensure a flush fit with nailers. Filler boards shall be a polyisocyanurate insulation.
- E. Secondary slope (crickets / saddles / sumps) shall be fabricated with perlite insulation, with a maximum 1/8 inch thick start thickness and tapered edge strips added and provide a minimum finished slope of 1/4 inch per foot.
- F. Positive drainage is required at all locations of the roof to prevent ponding of water.
- G. Insulation thickness shall match nailer thicknesses and adjacent boards within a 1/4 inch tolerance in all directions.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions and Supplementary Conditions of these specifications shall govern work under this Section.
- B. Section 02 05 00: Demolition and Removal
- C. Section 03 52 00: Lightweight Insulating Concrete/Gypsum Deck Repairs
- D. Section 06 10 00: Rough Carpentry

Thermal Roof Insulation
07 22 00-1

1.03 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced, and to provide any clarifications for issues not covered within this specification.
- B. AMERICAN SOCIETY FOR CIVIL ENGINEERS (ASCE):
 - 1. ASCE 7 (2005) Minimum Design Loads for Buildings and Other Structures
- C. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):
 - 1. ASTM C 1177 / C 1177M (2008) Glass Mat Gypsum Substrate for Use as Sheathing
 - 2. ASTM C 1289 (2011) Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
 - 3. ASTM C 1303 / 1303 M (2010) Test Method for Predicting Long-Term Thermal Resistance of Closed-Cell Foam Insulation
 - 4. ASTM C 208 (2008) Cellulosic Fiber Insulating Board
 - 5. ASTM C 726 (2005) Mineral Fiber Roof Insulation Board
 - 6. ASTM C 728 (2010) Standard Specification for Perlite Thermal Insulation Board
 - 7. ASTM D 1970 / D 1970 M (2011) Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
 - 8. ASTM D 2178 (2004) Asphalt Glass Felt Used in Roofing and Waterproofing
 - 9. ASTM D 312 (2006) Asphalt Used in Roofing
 - 10. ASTM D 3273 (2005) Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
 - 11. ASTM D 41 / D 41 M (2011) Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
 - 12. ASTM D 4586 (2006) Asphalt Roof Cement, Asbestos-Free
 - 13. ASTM D 4601 (2004) Asphalt-Coated Glass Fiber Base Sheet Used in Roofing
 - 14. ASTM D 4897 / 4897 M (2009) Asphalt-Coated Glass-Fiber Venting Base Sheet Used in Roofing

15. ASTM E 84 (2011) Standard Test Method for Surface Burning Characteristics of Building Materials
 16. ASTM E 136 (2011) Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
- D. FACTORY MUTUAL ENGINEERING AND RESEARCH CORPORATION (FM):
1. FM P9513 (Latest Edition) Loss Prevention Data for Roofing Contractors
 2. FM7825a (Latest Edition) Approval Guide Fire Protection
 3. FM P7825c (Latest Edition) Approval Guide Building Materials
- E. NATIONAL ROOFING CONTRACTOR'S ASSOCIATION (NRCA):
1. NRCA Roofing and Waterproofing Manual, Fifth Edition.
 2. NRCA/ARMA/SPRI Repair Manual for Low Sloped Roof Systems.
- F. UNDERWRITERS LABORATORIES, INC. (UL):
1. UL BMD (Latest Edition) - Building Materials Directory
- G. INTERNATIONAL CODE COUNCIL (IBC):
1. IBC (2009) International Building Code

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals.
- B. No work will begin until all submittals have been received and approved and Pre-Construction Conference has been completed.
- C. Manufacturer's Catalog Data
1. Fasteners
 2. Roof Insulation: Include minimum thickness of insulation for steel decks and fastener pattern for insulation on steel decks.
- D. Drawings
1. Wood Nailers
 - a. Show location and spacing of wood nailers that are required for securing insulation and for backnailing of roofing felts.

2. Coordinate requirements of Section 06 10 00, Rough Carpentry, Shop Drawings Requirements
 3. Tapered Roof Insulation System
 - a. Show a complete description of the procedures for the installation of each phase of the system indicating the type of materials, thicknesses, identify codes, sequence of laying insulation, location of ridges and valleys, special methods for cutting and fitting of insulation and special precautions.
 - b. Provide the average R-value calculations for each roof area.
 - c. Indicate calculation method used (arithmetic or volumetric) on plans.
 - d. The drawings shall be based on field measurements provided by the Contractor.
- E. Instructions
1. Nails and fasteners
 2. Roof insulation
 3. Unless otherwise indicated on the contract drawings, show the attachment patterns at field, perimeter and corners with roof plan showing areas.
- F. Statements
1. Installer Qualifications
 - a. Requirement: Submit certificate from the insulation manufacturer attesting that the installer has the proper qualifications for installing tapered roof insulation systems.
- G. Test Reports
1. Wind and Fire ratings/classifications.
- H. Data:
1. Manufacturer's Certificate of Conformance and Catalog Data will be required for each type of insulation and other material proposed for use, cricket and tapered insulation layout from the insulation manufacturer, and shall include printed application instructions, detailed fastening instructions and other details, as appropriate.

- I. Samples:
 - 1. One sample of each type of insulation shall be approved before materials are delivered to the work site.
 - 2. Samples shall accompany other applicable documentation specified herein above.
- J. Material Safety Data Sheets (MSDS): Submit Material Safety Data Sheets with each specification section and include with Safety Plan in accordance with Section 01 52 05, Safety Requirements.

1.05 FIRE AND WIND CLASSIFICATION

- A. Coordinate insulation and roof membrane to ensure the assembly / system meets the fire and wind requirements.
- B. Insulation shall have been tested as part of a roof construction assembly of the type used in this project, and the construction assembly listed as Fire Classified in UL Directory or Class I in FM Directory.
- C. Assembly shall meet the applicable rating/classifications requirements of the International Building Code.
- D. Coordinate with requirements of roof membrane specification.
- E. Fire Safety: All materials and systems shall meet the fire rating required by the International Building Code.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery
 - 1. Deliver materials to site in manufacturer's unopened and undamaged standard commercial containers bearing the following legible information:
 - a. Name of manufacturer;
 - b. Brand designation;
 - c. Specification number, type and class, as applicable, where materials are covered by a referenced specification; and
 - d. Asphalt's flashpoint (FP), equiviscous temperature (EVT) and finished blowing temperature (FBT).
 - 2. Deliver materials in sufficient quantity to allow continuity of the work.

B. Storage and Handling

1. Store and handle materials in a manner to protect from damage, exposure to open flame or other ignition sources and from wetting and moisture absorption. Any materials which are exposed to moisture shall be immediately removed from the site.
2. Adhere to manufacturer's requirements for removal of manufacturer's shipping wraps.
3. Materials which are permitted to be stored outside shall be on pallets covered with breathable tarps and secured from inclement weather.
4. As a minimum, perlite, fiberboard and all roll goods shall be stored in an enclosed building or trailer that provides a dry, adequately ventilated environment.
5. Store felt rolls on ends on pallets and a maximum of two pallets high.
6. For the 24 hours immediately before application of felts, store felts in an area maintained at a temperature no lower than 50 degrees F.
7. Any material exposed to moisture or inclement weather and any damaged materials shall be removed from site immediately and replaced with new materials.

1.07 ENVIRONMENTAL CONDITIONS

- A. Do not install roof insulation during inclement weather or when air temperature is below 40 degrees F or when there is ice, frost, or moisture visible on the roof deck.

1.08 CONTROL OF BITUMEN FUMES

- A. Minimize bitumen fumes during course of the work to the furthest extent possible based on building, setup, location, winds, etc.
- B. Air intake vents shall be shut off, closed, or blocked when hot asphalt work occurs with twelve (12) feet of intake vent.
1. Provide minimum seventy-two hours notice to owner personnel prior to shutting off, closing or closing intake vents.
 2. Damage to equipment from failure to shut off when air intake was inoperable, shall be repaired by the Contractor.
 3. Intakes shall be opened when work is complete in the area.
- C. Any hot bitumen work performed while personnel or activity is present at the facility shall require the use of a kettle mounted or attached fume recovery system designed to reduce smoke and fume emissions of hot bitumen and as approved by the Consultant/Engineer and Owner.

1. Kettle shall also be fitted with a closed bitumen feed system so that kettle lid/doors are not required to be opened during normal operation.
 2. Fume recovery system shall be operated at all times. Operation shall be in accordance with system manufacturer's operating instructions.
 3. Low fuming asphalts shall be used.
- D. Control of fumes/odors:
1. Use of low VOC shall be utilized during construction when possible.
 2. Air intakes, vents, etc. shall be shut off, closed or blocked when fumes or odors are possible which may impact the owner/occupants. Coordinate work of their nature with owner/occupant and Consultant/Engineer prior to performing work.

1.09 WARRANTY

- A. Roof insulation shall be included in the roof system warranty.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Roof Insulation: The following materials meeting the respective requirements, used as specified or required:
1. Polyisocyanurate:
 - a. ASTM C1289, Type II, Class I or II, grade II or III.
 - 1) Maximum size for fully adhered application is 4' x 4'.
 - 2) Maximum size for mechanically fastened application is 4' x 8'.
 - 3) Maximum thickness is 2.0 inches, unless approved otherwise.
 2. Perlite:
 - a. ASTM C 728, minimum 3/4 inch thick.
 3. Fiberboard:
 - a. High Density Fiberboard – ASTM C 208, minimum 3/4 inch thick.
 4. Tapered Roof Insulation:
 - a. Polyisocyanurate: ASTM C 1289, Type II, Class I or II, Grade II or III.

B. Other Materials

1. Venting Base Sheet:
 - a. Glass fiber, asphalt saturated and coated, with granule surface one side.
2. Ply Felt:
 - a. ASTM D 2178, Glass Fiber ply felt, asphalt saturated, Type VI for installation over mechanically fastened base sheet.
3. Wood Nailers:
 - a. Nailers for retaining insulation on non-nailable decks and for nailing of roofing felts, are specified under Section 06 10 00, Rough Carpentry and the same thickness as the insulation in all locations.
4. Cants, Crickets and Tapered Edge Strips:
 - a. Fabricated of the same material as the insulation or rigid perlite board, ASTM C 728.
 - b. Wood cants shall be used where indicated or noted on drawings.
5. Asphalt Primer:
 - a. ASTM D 41 / D 41 M.
6. Steep Asphalt:
 - a. ASTM D 312, Type III, low fuming.
7. Asphalt Roof Cement:
 - a. ASTM D 4586, Type I for horizontal surfaces and Type II for vertical and sloped surfaces.
8. Waterproof Underlayment:
 - a. Self-adhering, modified bitumen underlayment adhering to ASTM D 1970 / D 1970 M, or approved equivalent.

C. Fasteners

1. General:
 - a. Flush-driven through flat round or hexagonal steel or plastic plates.
 - b. Steel plates shall be zinc-coated, flat round not less than 1 3/8-inch diameter or hexagonal not less than 28 gage.

- c. Plastic plates shall be high-density, molded thermoplastic with smooth top surface, reinforcing ribs and not less than 3 inches in diameter.
 - d. Fastener head shall recess fully into the plastic plate after it is driven.
 - e. Plates shall be formed to prevent dishing.
 - f. Do not use bell-or cup-shaped plates.
2. When equivalent treatment methods / products, such as Alkaline Copper Quaternary (ACQ), Micronized Copper Quaternary (MCQ) or Copper Azole (CA) are used for wood substrates, the proposed fasteners / types must be compatible with these treatments.
3. Roofing Nails for Wood Substrates
- a. Barbed 11-gage, zinc-coated nails with 7/16 to 5/8-inch diameter heads or annular ring shank, square head, one-piece composite nails.
 - b. Nails shall be long enough to penetrate wood deck at least 5/8-inch but shall not protrude through underside of decking.
4. Fasteners for Lightweight Insulating Concrete/Gypsum Decks (LWIC)
- a. Approved base ply fasteners, maximum 1-3/4-inch in length, coated to resist rust and corrosion, with factory-attached minimum 2-3/4-inch coated metal plate.
 - b. Fasteners shall be specifically designed and approved by roof system manufacturer for deck type.

PART 3 - EXECUTION

3.01 COORDINATION REQUIREMENTS

- A. Insulation and complete roofing membrane shall be finished in one operation up to the line of termination at the end of each day's work. Phased construction will not be permitted.

3.02 PREPARATION OF SURFACES

A. General

- 1. All surfaces on which insulation and base sheet/vapor retarder are to be applied shall be clean, smooth, dry, and free of projections.
- 2. The condition of the surfaces shall be inspected and approved immediately before the work is begun.

B. Surface Inspection

1. Surfaces shall be clean, smooth and dry.
2. Check roof deck surfaces, including surfaces sloped to roof drains and outlets, for defects before starting work.
 - a. Any variations greater than 1/4 inch shall be addressed per the applicable deck repair section or if not included, shall be brought to the attention of the Consultant/Engineer immediately.
3. The Contractor shall inspect and approve the surfaces immediately before starting installation.
4. Prior to installing ventilating base sheet, perform the following:
 - a. Examine lightweight concrete fill/gypsum decks to ensure that surfaces are free of voids, deteriorated or wet areas and will provide suitable surfaces for installation of ventilating felt, fiberglass, base sheet, vapor retarder and insulation.
 - 1) See Section 03 52 00, Lightweight Insulating Concrete/Gypsum Deck Repair.
5. In the presence of the Consultant/Engineer perform the following surface-dryness test on concrete substrates, or any substrate where moisture is a concern.
 - a. Foaming: When poured on the deck, one pint of asphalt when heated in the range of 350 to 400 degrees F, shall not foam upon contact.
 - b. Stripability:
 - 1) After asphalt used in the foaming test application has cooled to ambient temperatures, test coating for adherence.
 - 2) Should a portion of the sample be readily stripped clean from surface, do not consider surface to be dry and do not start application.
 - 3) Should rain occur during application, stop work and do not resume until surface has been tested by method above and found dry.

C. Surface Preparation

1. Correct defects and inaccuracies in roof deck surface to eliminate poor drainage and hollow or low spots and perform the following:

- a. Install wood nailers the same thickness as insulation at eaves, edges, curbs, walls and roof openings for securing cant strips, gravel stops, gutters and flashing flanges.
 - b. On decks with slopes of one inch per foot or more, install wood nailers perpendicular to slope for securing insulation and for backnailing of roofing felts.
 - c. Space nailers in accordance with approved shop drawings.
2. Lightweight Insulating Concrete/Gypsum Deck:
- a. Cover lightweight insulating concrete decks with an asphalt coated glass base sheet.
 - b. Application of base sheet per NRCA and applicable FM criteria.
3. Primer for Other Substrates
- a. Solidly apply asphalt primer to other substrates as applicable at the rate of one gallon per 100 square feet of roof substrate/surface.
 - b. Allow primer to dry thoroughly.
 - c. Place felt strips, 4 inches or more in width, over joints, 2 inches on each side, between gaps or joints in substrates in a heavy coating of cold-applied asphalt roof cement.

3.03 HEATING OF ASPHALT

- A. Asphalt shall not be heated higher than 105 degrees F above the EVT or 50 degrees F below the flash point, or 525 degrees F, whichever is lower. EVT and flash point temperatures of asphalt in the kettle shall be conspicuously posted on the kettle. Kettle shall be provided with automatic thermostatic controls and an accurate thermometer. Kettle operators shall be in attendance at all times during heating and ensure that the maximum temperature is not exceeded. Asphalt shall be applied within a range of 25 degrees F below or above the EVT, or as specified by the manufacturer. Application temperature shall be measured at the mop bucket or mechanical applicator. Asphalt at a temperature below this range shall be returned to the kettle. Flame-heated equipment shall not be placed on the roof.
- B. A fume recovery kettle system shall be used.

3.04 VAPOR RETARDER

- A. Vapor retarder shall consist of two plies of roofing felt, mopped at right angle to the slope, with 6-inch end laps staggered at least 12 inches. The full 19 inch starter ply and full 36 inch wide ply sheets shall be placed, in succession, in hot asphalt immediately behind the applicator. Each ply shall be solid mopped in not less than

20 pounds nor more than 30 pounds of asphalt per square. A follow tool shall be used with glass felts and a broom shall be used with organic felts to embed the felts, eliminate air pockets and obtain adhesion between the plies. Side and end laps shall be completely sealed. Asphalt shall be visible beyond all edges of each ply as it is being installed. Plies shall be laid free of wrinkles, creases or fishmouths. Workers shall not walk on mopped surfaces when the asphalt is sticky. For slopes exceeding ½ inch per foot, some manufacturers allow or require that the felts be run parallel to the slope and that they be nailed off into strategically installed nailers inches from the upper edge with nails spaced 12 inches on centers and staggered in each row.

- B. At walls, eaves and rakes, the vapor retarder organic felts shall be extended 9 inches, or separate organic felt plies shall be executed 9 inches, with not less than 9 inches on the substrate, and the extended portion turned back and mopped in over the top of the insulation. At roof penetrations other than walls, eaves and rakes, the vapor retarder or separate plies shall be extended 9 inches to form a lap, which shall later be folded back over the edge of the insulation. Asphalt roof cement shall be used the vapor retarder for at least 9 inches from walls, eaves, rakes and other penetrations.

3.05 INSTALLATION

A. Roof Deck Surfaces

1. The application of roof insulation will not be permitted on roof decks when the temperature is below 40 degrees F or when there is ice, frost, or dampness visible on the roof deck.
2. All roof deck surfaces, including surfaces sloped to roof drains and outlets, shall be as required and approved by the manufacturer before the installation of any insulation; all defects and inaccuracies in the roof deck surface shall be corrected in a satisfactory manner so as to eliminate poor drainage, hollows, and low spots.

B. Insulation

1. All roof insulating materials shall be kept dry before, during and after installation.
2. Apply insulation in layers required with staggered joints when total required thickness of insulation exceeds 2 inches.
3. Lay insulation so that continuous longitudinal joints are perpendicular to direction of roofing, as specified in the roof membrane section and end joints of each course are staggered with those of adjoining courses.
4. When using multiple layers of insulation, joints of each succeeding layer shall be parallel and offset in both directions with respect to layer below.
5. Keep insulation ½-inch clear of vertical surfaces penetrating and projecting from roof surface.

6. Not less than 20 pounds of asphalt per 100 square feet of roof deck shall be used for mopping each layer of insulation in place.
7. For adhered applications, firmly embed each layer of insulation in continuous moppings of hot asphalt or approved equal. Walk/weight boards in to ensure full embedment. Fill all voids in excess of 1/4-inch with insulation.
8. For mechanically fastened applications, ensure boards are fit, edges supported on the bearing surface and mechanically fastened in accordance with the Factory Mutual criteria.

C. Cant Strips

1. Provide cant strips at all intersections of roof with walls, parapets and curbs extending above roof.
2. Wood cant strips shall bear on and be anchored to wood blocking, where possible, nail wood cant strips to adjoining surfaces.
3. Fit cant strips flush against vertical surfaces and have a minimum 4 inch vertical height.
4. Where cant strips are installed against non-nailable materials, install in heavy mopping of asphalt or set in a heavy coating of asphalt roof cement, or an approved adhesive.
5. Contractor shall take precautions required to prevent bitumen/asphalt from dripping into the interior of the building.

D. Tapered Roof Insulation

1. A factory tapered system shall be provided to attain slopes as shown on taper drawings and not less than 1/4-inch per foot.
2. Provide starter and filler blocks as required to provide the total thickness of insulation necessary to meet the specified slope and thermal conductance.
3. Mitered joints shall be factory fabricated and shall consist of two diagonally cut boards or one board shaped to provide the required slopes.
4. Identify each piece of tapered insulation board by color or other identity coding system, allowing the identification of different sizes of tapered insulation board required to complete the roof insulation system.
5. Four feet (4') x four feet (4') tapered insulation sumps required at all roof drain locations.
6. At the drainage locations, ensure insulation tapers up from the roof drain to a minimum 1/4"/1' and a maximum 1"/12". Provide tapered filler to match field insulation thicknesses. Do not provide tapered sump at overflow drains/outlets.

7. Where drainage occurs at roof drains, the start thickness of the tapered insulation system will be dictated by the back edge of the sump, but not less than 1/2 inch minimum.
8. At crickets, saddles and sumps including tapered cricket on the high side of all non-round penetrations which are 24 inches or greater. Finished slope shall be equal to the primary roof slope.

E. Tapered Edge Strips

1. Where indicated, provide edge strips in the right angle formed by junction of roof and wood nailing strips that extend above level of roof.
2. Install edge strips flush against vertical surfaces of wood nailing strips.
3. Where possible, nail edge strips to adjoining surfaces.
4. Where tapered edge strips are installed against non-nailable materials, install in heavy mopping of asphalt or set in a heavy coating of asphalt roof cement, or an approved adhesive.
5. Provide tapered edge strips at start of crickets where start thicknesses is greater than 1/4".

3.06 PROTECTION

A. Protection of Applied Insulation

1. Completely cover each day's installation of insulation with the finished roofing specified in the applicable roof membrane section on same day.
2. Do not permit phased construction.
3. Protect open ends of each day's work with temporary water cut-offs and remove when work is resumed. Ensure insulation joints are staggered at these locations. Tie off area/water cut offs shall be entirely sealed, checked and made watertight at the end of each day's work.
4. Protect open spaces between insulation and parapets or other walls and spaces at curbs, scuttles and expansion joints, until permanent roofing and flashing are applied.
5. Do not permit storing, walking, wheeling or trucking directly on insulation or on roofed surfaces.
6. Provide smooth, clean board or plank walkways, runways and platforms near supports, as necessary, to distribute weight to conform to indicated live load limits of roof construction.

B. Damaged Work and Materials

1. Restore work and materials that become damaged during construction to original condition or replace with new materials.

END OF SECTION 07 22 00

SECTION 07 31 09

SLATE ROOFING REPAIR

PART 1 - GENERAL

1.01 SUMMARY

- A. The work of this section includes the removal and reinstallation of courses of the slate roof system as necessary to perform the required work and where indicated on the drawings.
- B. Contractor is to re-use the existing slate to the fullest extent possible.
- C. The Contractor shall also visually survey all existing slate on Roof Area B and replace all broken or fractured slate including any slate with a broken corner greater than 1" x 1".
- D. Reinstallation of slate shall incorporate the use of copper slate hooks.
- E. Any extra slate shall be given to the Owner upon completion of the project.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.

1.03 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced, and to provide any clarifications for issues not covered within this specification.
- B. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):
 - 1. ASTM D 1970 / D 1970 M (2011) Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
 - 2. ASTM D226 / D226M (2009) Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
 - 3. ASTM C406 / C406M (2010) Standard Specification for Roofing Slate
 - 4. ASTM D 41 / D 41 M (2011) Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
 - 5. ASTM D 4586 (2000) Asphalt Roof Cement, Asbestos-Free
- C. INTERNATIONAL CODE COUNCIL (ICC):
 - 1. IBC (2009) International Building Code
 - 2. IEBC (2009) International Existing Building Code

D. NATIONAL ROOFING CONTRACTOR'S ASSOCIATION (NRCA):

1. The NRCA Architectural Sheet Metal and Metal Roofing Manual, 2006 Edition.
- E. The Slate Book, How to Design, Specify, Install, and Repair a Slate Roof, Stearns, Brian Stearns, Alan and Meyer, John, 1998.
- F. JLC Field Guide to Residential Construction A Manual of Best Practice Volume I, A Journal of Light Construction Book, Williston, VT, 2003.

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals.
- B. No work will begin until all submittals have been received and approved and Pre-Construction Conference has been completed.
- C. The Pre-Construction Conference will not be scheduled until submittals have been submitted and approved.
- D. Manufacturer's Catalog: Include applicable materials descriptions and technical data sheets or catalog cuts.
1. Base Sheet
 2. Fasteners
 3. Waterproof Modified Bitumen Underlayment
 4. Rosin Paper
- E. Samples:
1. Copper Slate Hooks
 2. Copper Fasteners
- F. Statements:
1. Applicator Qualifications: Certify that the applicator meets requirements specified under paragraph entitled "Qualifications of Applicator".
- G. Administrative or Close-Out Submittals:
1. Warranty: Submit the contractor's warranty provided in Section 01 77 05, Three-Year Contractor Warranty.
- H. Material Safety Data Sheets (MSDS): Submit Material Safety Data Sheets with each specification section and include with Safety Plan in accordance with Section 01 52 05, Safety Requirements.

1.05 QUALITY ASSURANCE

A. Qualification of the Applicator:

1. The roofing system applicator shall be approved by a slate roofing system manufacturer and shall have a minimum of five (5) years experience as a slate/tile roof system installer.
2. The applicator shall supply the names and locations of five (5) projects of similar size and scope that he has constructed within the previous five (5) years.

B. Pre-Construction Conference:

1. Before roofing work, including associated work, is performed, the Consultant/Engineer will hold a Pre-Construction Conference to review the following:
 - a. The drawings and specifications.
 - b. Procedure for on-site inspection and acceptance of the roofing substrate and pertinent structural details relating to the roofing system.
 - c. Contractor's plan for coordination of the work of the various trades involved in providing the roofing system and other components secured to the roofing.
 - d. Safety requirements.
2. The Pre-Construction Conference shall be attended by the Contractor; and personnel directly responsible for the installation of roofing, flashing, and sheet metal work; representative of the roofing materials manufacturer and all related sub-contractors. Conflicts among those attending the Pre-Construction Conference shall be resolved and confirmed in writing before roofing work, including associated work, is begun.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Deliver materials in manufacturers' original, unopened containers and rolls with labels intact and legible.
2. Mark and remove wet materials from the site.
3. Where materials are covered by a referenced specification, the container shall bear the specification number, type and class, as applicable.
4. Deliver materials in sufficient quantity to allow work to proceed without interruption.

B. Storage:

1. Protect materials against moisture absorption and damage.
2. Store roll materials on end on clean raised platforms or pallets one level high in dry locations with adequate ventilation, such as an enclosed building or closed trailer.
3. Do not store roll materials in buildings under construction until concrete, mortar, and plasterwork is finished and dry.
4. Maintain roll materials at temperatures above 50 degrees F for 24 hours immediately before application.
5. Store/secure all materials/equipment in a trailer.
6. Do not store more materials on roof than can be installed the same day, and remove unused materials at end of each days work. Distribute materials temporarily stored on roof to stay within live load limits of the roof construction.

C. Handling: Select and operate material handling equipment so as not to damage applied roofing. Prevent damage to edges and ends of roll materials.

1.07 WARRANTY

- A. Contractor and manufacturer warranties shall be exclusive and independent of each other. Each warranty shall be issued directly to the Owner and dated as noted below.
- B. Furnish the Three-Year Contractor Warranty as provided in Section 01 77 05, Three-Year Contractor Warranty. The warranty period shall be not less than 3 years from the date of substantial completion.
 1. If the Contractor fails to perform repairs within 72 hours of written notification, the warranty will not be voided because of work being performed by others to repair deficiencies/failures regardless of manufacturer's warranty to the contrary.

PART 2 - PRODUCTS

2.01 DESCRIPTION OF ROOFING SYSTEM

- A. Roofing system is composed of wood deck, underlayments and slate roofing; along with all associated flashings and accessories. This section requires slate repairs.
- B. This section includes the removal of the slate in areas indicated and all accessories to the deck, installation of ice and water shield, rosin sheet and base sheet, and reinstallation of slate on the entire base.

2.02 MATERIALS

- A. Existing salvaged slate shall be 'sounded' and used for all repairs to ensure a proper match in color, texture and size.
- B. All new slate must be approved for use in repair locations and shall meet the following requirements
 - 1. Grade: S1
 - 2. Modulus of Rupture: 9000 psi minimum
 - 3. Water Absorption: Less than .25
 - 4. Maximum depth for softening will be .002 inches.
 - 5. Thickness, texture and size to match existing, typical slate.
 - 6. Color: To match existing. Unfading Black, Black or Blue Black.
- C. Underlayment System
 - 1. Underlayment: Meeting ASTM D226 / D226M, #43 and acceptable to the slate manufacturer.
 - 2. Waterproof Modified Bitumen Underlayment: Polyethylene sheet backed rubberized asphalt membrane, minimum 40 mils thick meeting ASTM D 1970 / D 1970 M. Provide primer as recommended by manufacturer.
- D. Primer: D41
- E. Asphalt Roof Cement: ASTM D 4586, Type II for vertical surfaces; Type I for horizontal surfaces and compatible with membrane system.
- F. Reinstallation of slate shall incorporate the use of copper slate hooks. The bib method is not an acceptable method for reinstalling slate.
- G. Fasteners: Provide large head slaters' hard copper wire nails or cut copper, slating nails to be inserted of length twice the thickness of slate plus one inch, and meeting the NRCA Guidelines for Slate Roofs.
 - 1. For felts, use fasteners driven through metal discs or one-piece composite fasteners with heads not less than one inch in diameter or one inch square with rounded or 45-degree tapered corners.
 - 2. Masonry Walls and Vertical Surfaces:
 - a. Fasteners for Securing Felts, Modified Bitumen Sheets and Metal Items to Masonry Walls and Vertical Surfaces: Hardened steel nails with flat heads, diamond shaped points and mechanically deformed shanks not less than one inch long. Use power-driven fasteners only when approved in writing.

PART 3 - EXECUTION

3.01 VERIFICATION OF CONDITIONS

- A. Ensure that the following conditions exist prior to re-application of the roofing materials:
 - 1. Deck, curbs, valleys, perimeter walls, roof penetrating components and equipment supports are in place.
 - 2. Surfaces are rigid, dry, smooth and free from cracks, holes and sharp changes in elevation.
 - 3. The plane of the substrate does not vary more than 1/4 inch within an area 10 feet by 10 feet when checked with a 10-foot straight edge placed anywhere on the substrate.
 - 4. Substrates are sloped as indicated to provide positive drainage.
 - 5. Walls and vertical surfaces are constructed to receive counter flashing and will permit nailing of the base flashing materials.
 - 6. Treated wood is fastened in place at eaves, gable ends, openings and intersections with vertical surfaces for securing of felts and roof fixtures.

3.02 PREPARATION

- A. Coordinate the work with other trades to assure those components, which are to be secured to or stripped into the roofing system are available and that flashing and counter flashing are installed as the work progresses.
- B. Priming of Surfaces: Prime surfaces at the rate of 0.75 gallon per 100 square feet or as recommended by the modified bitumen sheet manufacturer's printed instructions and allow to dry.
 - 1. Priming of Concrete and Masonry Surfaces: After surface dryness requirements have been met, coat concrete and masonry surfaces which are to receive underlayment or base sheet uniformly with asphalt primer. Allow the primer to dry prior to application of the base sheet, underlayment, and flashing.
 - 2. Priming of Metal Surfaces: Prime flanges of metal edging strips, prior to roofing and underlayment system in accordance with the manufacturer's printed instructions and allow to dry.

3.03 APPLICATION

- A. Slating
 - 1. The first three courses at the base area shall be totally removed down to the wood decking, in a proper and careful manner to reinstall two courses and salvage the remainder for repairs.

2. The slate shall project 2 inches at the eaves and three-fourths of an inch at all gable ends, and shall be laid in horizontal courses with 3-inch for 8:12 or greater and 4-inch for 4:12 to 8:12 headlap, and each course shall break joints with the proceeding course by at least three inches.
3. Slates at the eaves or cornice line shall be doubled using same thickness slate for under eaves at first exposed course. Under eave slate to be no less than three inches longer.
4. Slates, overlapping sheet metal work shall have the nails so placed as to avoid puncturing the sheet metal. Exposed nails shall be permissible only in top courses where unavoidable.
5. Neatly fit slate around all pipes, ventilators, and other vertical surfaces.
6. Nails shall not be driven so far as to produce a strain on the slate.
7. Cover all exposed nail heads with plastic cement. Hip slates and ridge slates shall be laid in elastic cement. Spread thickly over unexposed surface of under courses of slate, nailed securely in place and carefully pointed with elastic cement.
8. Build in and place all flashing pieces, snow-guards, etc., furnished by the sheet metal contractor and cooperate with him in doing the work of flashing.
9. Upon completion, all slate must be sound, whole, clean, and the roof shall be left watertight and neat in every respect
10. Also required to provide owner all remaining pieces of slate in a wood box for storage in the mechanical penthouse.

B. Underlayment System

1. On all surfaces to be covered with slate, furnish and lay genuine asphalt saturated rag felt or an approved equal, not less in weight, than that commercially know as #43 felt or equal.
2. Felt shall be laid in horizontal layers with joints lapped towards the eaves at least 2", and well secured along laps and at ends as necessary to properly hold the felt in place and protect the structure until covered with the slate. All felt shall be preserved unbroken, tight, and whole.
3. Where slate is replaced modified bitumen underlayment shall lap all ledges, hips, valleys, and ridges at least 12 inches to form double thickness.

C. Nails

1. All slate shall be fastened with two large head slates, hard copper wire nails, cut copper, cut brass or cut yellow metal slating nails to be inserted of length twice the thickness of slate plus one inch.

D. Hips/Ridges

1. All Hips/ridges shall be laid to match existing condition. Ridge sections missing shall have matching pieces installed.
2. Provide a sheet metal ridge cap of copper for all roof areas (for repairs and replacement).

E. Repairs

1. Repairs to Damaged Slate: This method can be used to replace individual slate, or groups of damaged slate. The Contractor shall insure no broken/ missing slate remain when the project is complete.
 - a. Remove both nails with a slate ripper, and remove any remaining slate.
 - b. Insert a slate hook halfway between the bordering slates and on an even line with those slates.
 - c. Insert new piece of slate.

F. Clean Up

1. Remove debris, scraps, containers and other rubbish and trash resulting from installation of the roofing system from job site each day.
2. Protection of Applied Roofing Against Moisture Absorption: At the end of the days work and whenever is imminent, protect applied roofing system.

END OF SECTION 07 31 09

SECTION 07 53 07

MODIFIED BITUMEN CAP SHEET AND FELT ROOFING SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

- A. This section requires the installation of a four-ply roofing system consisting of three (3) plies of fiberglass felt and a cold applied granular surfaced modified bitumen cap sheet.
- B. Roof insulation required with this roof system is contained in Section 07 22 00, Thermal Roof Insulation.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions shall govern work under this Section.
- B. Section 06 10 00: Rough Carpentry
- C. Section 07 22 00: Thermal Roof Insulation
- D. Section 07 60 00: Sheet Metal

1.03 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced, and to provide any clarifications for issues not covered within this specification.
- B. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):
 - 1. ASTM D 2170 (2006) Kinematic Viscosity of Asphalts (Bitumens)
 - 2. ASTM D 2178 (2004) Asphalt Glass Felt Used in Roofing and Waterproofing
 - 3. ASTM D 312 (2006) Asphalt Used in Roofing
 - 4. ASTM D 41 (2005) Asphalt Primer Used in Roofing, Dampproofing and Waterproofing
 - 5. ASTM D 4402 (2006) Viscosity Determination of Asphalt at Elevated Temperatures Using a Rotational Viscometer
 - 6. ASTM D 4586 (2006) Asphalt Roof Cement, Asbestos-Free
 - 7. ASTM D 4601 (2004) Asphalt-Coated Glass Fiber Base Sheet Used in Roofing
 - 8. ASTM D 5147 (2007) Sampling and Testing Modified Bituminous Sheet Material

- C. FACTORY MUTUAL ENGINEERING AND RESEARCH CORPORATION (FM):
 - 1. FM AS 4470 (Latest Edition) Class I Roof Covers
 - 2. FM P7825 (Latest Edition) Approval Guide
- D. INTERNATIONAL CODE COUNCIL (ICC):
 - 1. IBC (2009) International Building Code
 - 2. IEBC (2009) International Existing Building Code
- E. UNDERWRITERS' LABORATORIES, INC. (UL):
 - 1. UL 790 (Latest Edition) tests for Fire Resistance of Roof Materials, Fifth Edition.
 - 2. UL BMD (Latest Edition) Building Materials Directory

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals.
- B. No work will begin until all submittals have been received and approved and Pre-Construction Conference has been completed.
- C. Manufacturer's Catalog, Applicable Material Safety Data Sheets (MSDS), and Instructions: Include applicable materials descriptions and technical data sheets or catalog cuts.
 - 1. Modified bitumen membrane system
 - 2. Cold applied adhesive
 - 3. Asphalt (for felts)
 - 4. Felts (ply sheets)
 - 5. Primer
 - 6. Asphalt roof cement compatible with modified bitumen
 - 7. Fasteners
- D. Statements:
 - 1. Manufacturer Qualifications: Certify that the manufacturer of the modified bitumen membrane meets requirements specified under paragraph entitled "Qualification of Manufacturer". Show evidence that all products used within this specification are also manufactured in the United States.

2. Applicator Qualifications: Certify that the applicator meets requirements specified under paragraph entitled "Qualifications of Applicator".
 3. Roofing Asphalt Bill of Lading: Submit bill of lading when labels of asphalt containers do not bear the flash point (FP), finish blowing temperature (FBT) and equiviscous temperature (EVT).
- E. Certificates of Compliance: Certify that materials are physically and chemically compatible with each other; that materials are in conformance with requirements of these specifications and that each material is suitable for the intended purpose.
1. Modified bitumen sheet
 2. Asphalt and cold applied adhesive
 3. Felts (ply sheets)
 4. Primer
 5. Asphalt roof cement
 6. Fasteners
- F. Administrative or Close-Out Submittals:
1. Information Card:
 - a. Information Card Contents: For each roofing installation, submit a typewritten card, laminated and framed (interior display), or photoengraved aluminum card (exterior display) and a duplicate card containing the information listed on Form 1 located at the end of this section.
 - b. Warranty: Furnish 3-year contractor and 20-year manufacturer warranty as required.
 - c. Material Safety Data Sheets (MSDS): Submit Material Safety Data Sheets with each specification section and include with Safety Plan in accordance with Section 01 52 05, Safety Requirements.

1.05 QUALITY ASSURANCE

- A. Qualification of Manufacturer:
1. The modified bitumen sheet roofing system manufacturer shall have a minimum of ten (10) years experience in manufacturing modified bitumen roofing products in the United States.
 2. Show evidence that specified products and materials are manufactured in the United States.

3. The manufacturer shall provide a minimum of five (5) site visits by a technical representative during the course of the project.
4. ADC Engineering, Inc. will perform once a week QA site visits for the Owner for the duration of the project.

B. Qualification of the Applicator:

1. The roofing system applicator shall be approved by the modified bitumen sheet roofing system manufacturer for twenty (20) years, no dollar limit warranties; and shall have a minimum of five (5) years experience as an approved applicator with that manufacturer.
2. The applicator shall supply the names and locations of five (5) projects of similar size and scope that he has constructed within the previous three (3) years.

C. Fire Safety:

1. When the modified bitumen membrane is used in a roofing system installed over a metal deck, the system must have either a UL 1256 Roof Deck Construction Classification or a FM Class 1 listing in addition to a UL 790.
2. The complete roof covering assembly shall have a UL 790, Class A Classification, be listed as "fire classified" in UL BMD and bear the UL Label or be listed as a Class I Roof Deck Construction in FM P7825.

D. Wind Resistance

1. The system shall adhere to all requirements of the applicable Factory Mutual criteria.
2. The complete roof covering assembly shall meet FM-1A-90.

E. Pre-Construction Conference:

1. Prior to the application of any construction, there will be a Pre-Construction Conference at the jobsite to ensure:
 - a. A clear understanding of the drawings and specifications.
 - b. Clear understanding of scope of work for all interested parties.
 - c. Coordination of work while maintaining the function and use of the building.
2. Safety requirements.
3. The Pre-Construction Conference shall be attended by the Contractor and personnel directly responsible for the installation of roofing, flashing and sheet metal work.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Deliver materials in manufacturers' original, unopened containers and rolls with labels intact and legible.
2. Mark and remove wet materials from the site.
3. Where materials are covered by a referenced specification, the container shall bear the specification number, type and class, as applicable.
4. Labels or bill of lading for roofing asphalt shall be plainly marked with the specification number, type, FP, FBT AND EVT.
5. Deliver materials in sufficient quantity to allow work to proceed without interruption.

B. Storage:

1. Protect materials against moisture absorption.
2. Store roll materials on end on clean raised platforms or pallets one level high in dry locations with adequate ventilation, such as an enclosed building or closed trailer.
3. Do not store roll materials in buildings under construction until concrete, mortar and plaster work is finished and dry.
4. Maintain roll materials at temperatures above 50 degrees F for 24 hours immediately before application.
5. Do not store materials outdoors unless approved by the Consultant/Engineer.
6. Completely cover felts stored outdoors, on and off roof, with waterproof canvas protective covering. Do not use polyethylene sheet as a covering. Tie covering securely to the pallets to make completely weatherproof and yet provide sufficient ventilation to prevent condensation.
7. Do not store more materials on roof than can be installed the same day and remove unused materials at end of each days work. Distribute materials temporarily stored on roof to stay within live load limits of the roof construction.

C. Handling:

1. Select and operate material handling equipment so as not to damage applied roofing. Prevent damage to edges and ends of roll materials.

1.07 ENVIRONMENTAL CONDITIONS

- A. Do not install roofing system when air temperature is below 40 degrees F, during any form of precipitation -- including fog -- or where there is ice, frost, moisture or any other visible dampness on the roof deck.

1.08 PROTECTION OF PROPERTY

- A. Install protective coverings at paving and building walls adjacent to hoist and kettles prior to starting the work.
 - 1. Lap protective coverings not less than six (6) inches, secure against the wind and vent to prevent collection of moisture on covered surfaces.
 - 2. Keep protective coverings in place for the duration of the roofing work.
- B. Flame-Heated Equipment:
 - 1. Do not place flame-heated equipment on roof.
 - 2. Provide and maintain a fire extinguisher adjacent to flame-heated equipment and on the roof.
- C. Electric-Heated Equipment: Provide adequate electrical service as required by manufacturer of electrical equipment to insure against damage to equipment and property and to insure proper application of roofing materials.

1.09 WARRANTY

- A. Contractor and manufacturer warranties shall be exclusive and independent of each other. Each warranty shall run directly to the Owner and be dated the substantial completion date or later.
- B. Furnish Three-Year Contractor Warranty for Modified Bitumen Cap Sheet and Felt Roofing System as provided at the end of this section. In no event shall warranty period be less than three (3) years from the date of substantial completion of the work.
 - 1. If the Contractor fails to perform repairs within seventy-two (72) hours of written notification, the warranty will not be voided because of work being performed by others to repair roofing regardless of manufacturer's warranty to the contrary.
- C. Manufacturer's Warranty: Furnish the Modified Bitumen Cap Sheet and Felt Roofing System Manufacturer's Twenty-Year Warranty to include the following:
 - 1. The warranty shall cover all associated costs for the repair and/or replacement of defective materials on the roof system, including insulation.
 - 2. The warranty shall provide that if within the warranty period the system deteriorates, splits, weathers excessively or shows any other symptoms of failure, the complete corrective action shall be the responsibility of the manufacturer.

PART 2 - PRODUCTS

2.01 DESCRIPTION OF ROOFING SYSTEM

- A. Three (3) plies fiberglass asphalt felt in hot asphalt and SBS Modified Bitumen cap sheet cold applied adhesive.
- B. Substrate: Roof Insulation

<u>Components</u>	<u>Quantity</u>
1. Fiberglass Felt	
a. Ply Felt	3 plies
2. Cap Sheet	
a. SBS Modified Bitumen	1 ply
3. Asphalt (for ply felts)	
a. Type III	±25 lbs per SQ.
4. Cold Applied Adhesive (for cap sheet)	
a. In accordance with Manufacturer's printed requirements.	

2.02 MATERIALS

- A. Asphalt: ASTM D312, Type III.
- B. Ply Felt: Asphalt coated fiberglass felt in accordance with ASTM D 2178 Type VI.
- C. Modified Bitumen Cap Sheet: ASTM D 5147, D6162, D6163 and/or D6164.
- D. Cold Applied Adhesive
 - 1. Flash Point: ASTM D 93, 100 degrees F.
 - 2. Weight per Gallon: ASTM D 1475, 7.7 pounds/gallon.
 - 3. Asphalt Content: ASTM D 4479, 40 percent.
 - 4. Solids by Weight: ASTM D 4479, 50 percent.
 - 5. Color: Black.
 - 6. VOC: ASTM D 3960, 1.9 pounds/gallon.
 - 7. Field grade for horizontal applications, ASTM D 3019, Type III. Trowel grade for vertical applications, ASTM D 4586, I.

Designation	Use	Felt	Impregnate	Coating	Specification
GB	Base Sheet	Glass	Asphalt	Asphalt	ASTM D 4601, Type II, No Perforations
RSC	SBS Modified Cap Sheet	Fiberglass and/or Bitumen Polyester	SBS Modified / SBS Bitumen Granules	SBS	See Note 1

- a. Note 1: Modified bitumen membrane shall be a mineral surfaced pre-fabricated Styrene Butadiene Styrene (SBS) modified bitumen sheet, 130 mils thick minimum, with a layer of fiberglass and/or polyester sheet reinforcement, fire rated.
- b. A two-ply base flashing including a fiber glass base sheet and an APP foil faced modified cap sheet.

E. Primer: ASTM D 41.

F. Asphalt Roof Cement: ASTM D 4586, Type II for vertical surfaces; Type I for horizontal surfaces and compatible with membrane system.

G. Fasteners: Provide non-corrosive fasteners as recommended by the Modified Bitumen Sheet manufacturer's printed instructions and meeting the requirements of FM A/S4470.

1. For felts, use fasteners driven through metal discs or one-piece composite fasteners with heads not less than one inch in diameter or one inch square with rounded or 45-degree tapered corners.
2. Masonry Walls and Vertical Surfaces:
 - a. Fasteners for Securing Felts, Modified Bitumen Sheets and Metal Items to Masonry Walls and Vertical Surfaces:
 - 1) Hardened steel nails with flat heads, diamond shaped points and mechanically deformed shanks not less than one inch long.
 - 2) Use power-driven fasteners only when approved in writing.

H. Metal Discs (Tin Caps):

1. Flat non-corrosive fasteners as recommended by the modified bitumen manufacturer's printed instructions and meeting the requirements of FM A/S4470; not less than 3 inches in diameter, when using screw type fasteners.
2. Discs shall be formed to prevent dishing or cupping.

PART 3 - EXECUTION

3.01 VERIFICATION OF CONDITIONS

- A. Ensure that the following conditions exist prior to application of the roofing materials:
1. Drains, curbs, cants, perimeter walls, roof penetrating components and equipment supports are in place.
 2. Surfaces are rigid, dry, smooth and free from cracks, holes and sharp changes in elevation. Joints in the substrate are sealed to prevent dripping of bitumen into building or down exterior walls.
 3. The plane of the substrate does not vary more than 1/4 inch within an area 10 feet by 10 feet when checked with a 10-foot straight edge placed anywhere on the substrate.
 4. Substrate is sloped as indicated to provide positive drainage.
 5. Walls and vertical surfaces are constructed to receive counter flashing and will permit nailing of the base flashing materials.
 6. Treated wood nailers are fastened in place at eaves, gable ends, openings and intersections with vertical surfaces for securing of felts, edging strips, gravel stops and roof fixtures. Surface-applied nailers are the same thickness as the roof insulation.
 - a. NOTE: Use wood cant in non-supported flashing and wood blocking details (expansion joints, area dividers and wall/roof intersections where roof deck is not supported by wall).
 7. Cants:
 - a. Cants are securely fastened in place in the angles formed by walls and other vertical surfaces.
 - b. The angle of the cant is 45 degrees and the height of the vertical leg is not less than nominal 4 inches.
 - c. Cants are constructed of treated wood or wood fiberboard roof insulation, as shown on drawings.
 8. Insulation boards are installed smoothly and evenly, and are not broken, cracked or curled. Insulation is being roofed over on the same day the insulation is installed.

3.02 PREPARATION

- A. Coordinate the work with other trades to assure that components, which are to be secured to or stripped into the roofing system are available and that flashing and counter flashing are installed as the work progresses.

- B. Priming of Surfaces: Prime surfaces at the rate of 0.75 gallon per 100 square feet or as recommended by the manufacturer's printed instructions and allow to dry.
1. Priming of Concrete and Masonry Surfaces:
 - a. After surface dryness requirements have been met, coat concrete and masonry surfaces, which are to receive roof insulation and roofing materials uniformly with asphalt primer.
 - b. Allow the primer to dry prior to application of the insulation, roofing and flashing.
 2. Priming of Metal Surfaces:
 - a. Prime flanges of metal edging strips, prior to stripping into the roofing system in accordance with the modified bitumen manufacturer's printed instructions and allow to dry.
- C. Heating of Asphalt:
1. Break up solid asphalt on surface free of dirt and debris.
 2. Heat asphalt in kettle designed to prevent contact of flame with surfaces in contact with the asphalt.
 3. Kettles shall have visible thermometer and thermostatic controls set to the temperature limits specified herein.
 - a. Keep controls in working order and calibrated.
 - b. Use immersion thermometer, accurate within a tolerance of plus or minus 2 degrees F. to check temperatures of the asphalt frequently.
 - c. If the temperature of the asphalt at the moment of application is below the minimum specified herein, analyze the sample as specified herein, and replace with new material if deficiencies are disclosed.
 - d. If temperatures exceed maximums specified, remove asphalt from the site.
 - e. Do not permit cutting back, adulterating or fluxing of asphalt.
- D. Adhesive:
1. Storage of adhesive must be adhered to strictly.
 2. Adhesive will be installed using the notched, trowel method.
 3. If temperatures exceed minimum or maximum specified, remove adhesive from the site.
 4. Do not permit cutting back, adulterating or modifying the adhesive.

3.03 APPLICATION

- A. Apply roofing materials as specified herein, unless specified or recommended otherwise by the manufacturer's printed application instructions.
 - 1. Keep roofing materials dry before and during application.
 - 2. Do not permit phased construction of membrane system.
 - 3. Complete application of roofing in a continuous operation. Begin and apply only as much roofing in one day as can be completed that same day.
 - 4. Maintain the specified temperatures for the asphalt.
 - 5. Provide temporary roofing and flashing as specified herein prior to the application of the permanent roofing system.

- B. Temporary Roofing and Flashing:
 - 1. Provide temporary roofing and flashing where considerable work by other trades, such as installing antennas, pipes, ducts, is to be performed on the roof or where construction scheduling or weather conditions require protection of the building's interior before the permanent roofing system can be installed.
 - 2. Do not install temporary roofing over permanently installed insulation.
 - 3. Provide rigid pads for traffic over the temporary roofing.

- C. Plying Felt:
 - 1. Apply ply felts shingle fashion in hot-moppings of asphalt.
 - 2. Apply felts in a continuous operation.
 - 3. Provide starter sheets of felt to maintain the specified number of plies of felt throughout the roofing.
 - 4. Apply felts with the side laps in accordance with the material manufacturer's printed instructions.
 - 5. Provide end laps of not less than 6 inches and staggered a minimum of 36 inches.
 - 6. Apply felts at right angles to the roof slope so that the direction of flow of water is over and not against the laps.
 - 7. Apply felts on the other side (lap roof) in the same manner, resulting in twice the number of roofing felts and asphalt at the crown.
 - 8. Extend felts two inches above the top of cant strips or to the top of cant strips.
 - 9. Trim felt to a neat fit around vent pipes, roof drains and other projections through the roof.

D. Hot Mopping of Ply Felts:

1. Use hot Type III Asphalt as required, for bonding of plies of felt to each other and to the substrate.
2. Apply the felts immediately following the application of the hot asphalt.
3. Do not work ahead with the asphalt.
4. The bitumen shall be completely fluid, with the mop temperatures within the specified EVT range, at the instant the felts come in contact with the bitumen.
5. Application of the bitumen between felts shall be such as to provide voidless coverage and complete penetration of the bitumen into the felt above and below.
6. Embed felts in the bitumen.
7. As felts are being rolled into the hot bitumen, immediately and thoroughly squeegee to eliminate trapped air and to provide tight, smooth lamination resulting in a composite roofing membrane without wrinkles, buckles, kinks, or fishmouths.
8. When rolling felt, walk on the up side, not behind the felt.
9. The complete roofing system shall be free of pockets or blisters.

E. Temperature Limitations for Asphalt:

1. Heat and apply asphalt at the temperatures specified below unless specified otherwise by the manufacturer's printed application instructions.
2. Use thermometer to check temperature during heating and application. Have kettle attended constantly during heating process to ensure specified temperatures are maintained.
3. Do not heat asphalt above its finished blowing temperature (FBT).
4. Do not heat asphalt between 500 and 525 degrees F. for longer than four consecutive hours.
5. Do not heat asphalt to the flash point (FP).
6. Apply asphalt and embed base sheets when the temperature of the asphalt is within plus or minus 25 degrees F. of the equiviscous temperature (EVT).
7. Before heating and application of the asphalt, refer to the asphalt manufacturer's label or bill of lading for the FBT, FP and EVT of the asphalt used.

F. Adhesive Application:

1. A notched trowel or notched squeegee with 1/4 inch (6 mm) grooves, specifically listed and approved by modified bitumen membrane manufacturer.

2. The adhesive shall be installed uniformly and neatly to create a small, consistent flow out at side and end laps.
3. All membrane shall be rolled with roller to insure proper setting, adherence and no voids.
4. Strictly follow specific manufacturer guidelines for side and end lap applications.
5. A "lap" squeegee shall be used, if recommended or suggested in the manufacturer's printed literature.

G. Modified Bitumen Sheets:

1. Sheets shall be watertight and visually free of pinholes, particles of foreign matter, un-dispersed raw material or other manufacturing defects that might affect serviceability.
2. Edges of the seams shall be straight and flat so that they may be seamed to one another without forming fish mouths or wrinkles.

H. Mineral Surfaced Modified Cap Sheet:

1. Prior to laying mineral surfaced cap sheets, cut rolls into sheets 12 to 18 feet long, and stack protected plies for not less than 24 hours. Sheets shall not be buckled or wrinkled.
2. Apply sheets shingle fashion and in same direction as ply felts. Maintain 4-inch side laps and 6 inch end laps.
3. Stagger end laps not less than 12 inches.
4. Apply sheets firmly into cold-applied adhesive the full width under sheets. Heat weld edges of sheets. Maintain flow beyond edge of sheet to a 1/2 inch maximum. Imbed loose granules in adhesive to provide a uniform appearance of the surfacing.
5. Cap sheet shall be applied in a continuous application, starting at the low point of the roof and progress to the high point.

I. Cants Strips:

1. Where indicated, provide cant strips at intersections of the roof with walls, curbs, or expansion joints.
2. The face of the cant strip shall have an incline of 45 degrees.
3. Cants shall be made to fit flush on vertical and horizontal surfaces.

J. Base Flashing:

1. Base flashing system shall be a two-ply base flashing system (one base ply fiberglass base sheet and one modified bitumen cap sheet).

2. Base ply fiberglass base sheet shall be installed and shall be fully adhered in hot asphalt.
3. Cap ply of base flashing shall be a foil faced APP modified bitumen sheet fully adhered to the base ply fiberglass base sheet. All laps shall be fully welded.
4. Apply bituminous flashing in the angles formed where the roof deck abuts walls, curbs, ventilators, pipes and other vertical surfaces, in accordance with the membrane manufacturer's printed application instructions and where necessary to make the work watertight.
5. Carry flashing materials a minimum of 8 inches up the vertical surfaces and 4 inches out on the roof surface. Lap sides not less than 4 inches. Secure to wall 8" on center using maximum 4' long sheets.
6. Where necessary, raise all curbs to provide a minimum 8-inch flashing height above the finished.
7. Metal counterflashings are specified under Section 07 60 00, Sheet Metal.

K. Clean Up:

1. Remove debris, scraps, containers and other rubbish and trash resulting from installation of the roofing system from job site each day.

L. Protection of Applied Roofing Against Moisture Absorption: At the end of the days work and whenever is imminent, protect applied modified bitumen roofing system as follows.

1. Water Cut-offs:

- a. The insulation line shall be straightened using loose-laid cut insulation sheets and the terminated edge of the modified bitumen roofing system shall be sealed with two full width strips of roofing felt set in and coated with asphalt roof cement.
- b. One-half width of the strips shall extend up and over the finished roofing and the other half-width extended out onto the bare deck unless recommended otherwise in the membrane manufacturer's printed application instructions.
- c. Flute in metal decking shall be sealed off along the cut-off edge.
- d. Membrane shall be pulled free or cut to expose the insulation when resuming work and the insulation sheets used for fill-in shall be removed.

2. Temporary Flashing for Permanent Roofing:

- a. Provide temporary flashing at drains curbs, walls and other penetrations and terminations of roofing felts until the roofing membrane is complete and the permanent flashings are applied.

Modified Bitumen Cap Sheet and Felt Roofing System

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- b. Temporary flashings shall consist of one ply of ply felt applied in a trowel coat of asphalt roof cement applied to a primed surface and finished with a surface coat of asphalt roof cement.
 - c. Remove temporary flashing before applying permanent flashing.
3. Temporary Walkways, Runways and Platforms:
- a. Do not permit storing, walking, wheeling and trucking directly on applied roofing materials.
 - b. Provide temporary walkways, runways and platforms of smooth clean boards or planks as necessary to avoid damage to applied roofing materials and to distribute weight to conform to indicated live load limits of roof construction.
 - c. Use clean rubber-tired equipment for roofing work.

3.04 FIELD QUALITY CONTROL

- A. Protect roof system from moisture intrusion and other forms of damage during course of construction project. Replacement of moisture/damage to new is required.
- B. Repair deficiencies/voids (air pockets, wrinkles, fishmouths, tears, cuts, abrasions, contamination, standing/ponding water areas, etc.) daily.
- C. Project shall be free of moisture/damage and deficiencies/voids.

3.05 INFORMATION CARD

- A. Information Card Contents: Install a photoengraved aluminum card (for exterior display) at location to be determined by Consultant/Engineer. Information listed on the Form located at the end of this section.
- B. The card shall be a minimum size of 8-1/2 by 11 inches.

END OF SECTION 07 53 07

MODIFIED BITUMEN CAP SHEET AND FELT ROOFING SYSTEM DESCRIPTION FORM

1. Owner: _____
2. Project Name & Location: _____
3. Building No.: _____ 4. Roof Area: _____ 5. Cont. No: _____
6. New Construction: Yes No 7. Deck Slope: _____
8. Deck Type:
- Metal Wood Plank or Plywood
- Cast-In-Place Concrete Other: _____
- Precast/Pre-stressed Concrete
9. Insulation Type:
- Fiberglass Polyisocyanurate Foam Board
- Perlite Board Polyurethane Foam Board
- Extrude-Expanded Polystyrene Fiber Board
- Composite Bd. Other: _____
10. Insulation Thickness: _____
11. Insulation Manufacturer: _____
12. Vapor Treatment: _____ Total Coverage: Yes No
- No Vapor Retarder Bituminous Vapor Retarder
- One Way Roof Vents Vinyl Film Vapor Retarder
- Laminated Kraft Paper Other: _____
13. Membrane Manufacturer: _____
14. Membrane Type:
- Fiberglass Felts (Asphalt) Modified Bitumen Cap Sheet (SBS)
- Fiberglass Felts (Cold Applied) Modified Bitumen Cap Sheet (APP)
- Other: _____
15. Bitumen Manufacturer: _____
16. Method of Attachment of Roofing Membrane:
- Bitumen (Asphalt) Torched
- Mechanically Fastened Other: _____
- Cold Applied (Cap Sheet)
17. Warranty Period: _____ 18. Date Roof Completed: _____
19. Roofing Contractor: _____
20. Prime Contractor (Name/Address): _____
21. Prime Contractor's Signature: _____ Date: _____

SECTION 07 60 00

SHEET METAL

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes all sheet metal items and accessories specified or as required to complete the work. Applicable edge metal systems shall adhere to the general requirements of ANSI/SPRI ES-1, 2003, in accordance with the IBC 2009.
- B. All treated / waterproof carpentry shall have waterproof underlayment to provide separation with sheet metal.
- C. New clamping rings, stainless steel bolts and metal strainers are required on all roof drains.
- D. A set quantity is required for roof drains. This quantity is to be included in the Base Bid as listed on the Unit Prices Attachment. Any quantity above or below the set quantity amount shall result in an add or deduct to the Contract Sum based on the unit price provided.

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions shall govern work under this Section.
- B. Section 06 10 00: Rough Carpentry
- C. Section 07 31 09: Slate Roofing Repair
- D. Section 07 53 07: Modified Bitumen Cap Sheet and Felt Roofing System
- E. Section 07 92 00: Sealants for Roofing and Sheet Metal

1.03 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced, and to provide any clarifications for issues not covered within this specification.
- B. ALUMINUM ASSOCIATION, INC. (AA):
 - 1. AA DAF-45 (2003) Designation System for Aluminum Finishes.
 - 2. AA SAA-46 (1979) Standards for Anodized Architectural Aluminum.

- C. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
1. ANSI/SPRI ES-1 (2003) Wind Design Standard for Edge Systems Used with Low Slope Roof Systems
 2. ANSI/ASME A112.6.4 (2008) Roof, Deck and Balcony Drains
- D. AMERICAN WELDING SOCIETY (AWS):
1. AWS D1.1/D1.1M (2006) Structural Welding Code – Steel
 2. AWS D1.2/D1.2M (2004) Structural Welding Code – Aluminum
- E. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):
1. ASTM A 167 (2004) Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
 2. ASTM A 48 / A 48M (2003) Gray Iron Castings
 3. ASTM A 653/A 653M (2010) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
 4. ASTM A 792 / A 792M (2010) Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot Dip Process
 5. ASTM A 924 / A 924M (2006) Steel Sheet, Metallic-Coated by the Hot-Dip Process
 6. ASTM B 209 (2010) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 7. ASTM B 32 (2004) Solder Metal
 8. ASTM B 370 (2003) Copper Sheet and Strip for Building Construction
 9. ASTM B 69 (2005) Rolled Zinc
 10. ASTM D 1970 / D 1970 M (2011) Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
 11. ASTM D 41 / D 41 M (2011) Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
 12. ASTM D 4586 (2006) Asphalt Roof Cement, Asbestos-Free
 13. ASTM D 4601 (2004) Asphalt-Coated Glass Fiber Base Sheet Used in Roofing
 14. ASTM D 4637 (2004) EPDM Sheet Used in Single-Ply Roof Membrane

- F. COPPER DEVELOPMENT ASSOCIATION, INC (CDA):
 - 1. Copper, Brass, Bronze Design Handbook.
- G. FACTORY MUTUAL (FM):
 - 1. FM DS 1-49 (Latest Edition) Perimeter Flashing
- H. INTERNATIONAL CODE COUNCIL (ICC):
 - 1. IBC (2009) International Building Code
 - 2. IEBC (2009) International Existing Building Code
- I. NATIONAL ROOFING CONTRACTOR'S ASSOCIATION (NRCA):
 - 1. NRCA Roofing and Waterproofing Manual, Fifth Edition.
- J. SHEET METAL & AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA):
 - 1. SMACNA - Architectural Sheet Metal Manual, Sixth Edition
- K. REVERE COPPER PRODUCTS, INC.:
 - 1. Copper and Common Sense, Eight Edition

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals.
- B. No work will begin until all submittals have been received and approved and Pre-Construction Conference has been completed.
- C. Drawings:
 - 1. Details shall be in strict accordance with the drawings provided.
 - 2. All details are based on the guidelines of the NRCA Construction Details, Fifth Edition and SMACNA Architectural Sheet Metal Manual, Sixth Edition.
 - 3. Contractor shall provide shop drawings with the following information for all new sheet metal flashings and components:
 - a. Type and gage of metal, configuration, dimensions, fastening and anchoring methods to include type fastener and frequency of attachment, provisions for expansion and contraction flashing closures and trim.

- b. Any deviation/variation requested due to manufacturers requirements must be submitted in writing for approval.
- c. Any items of concern should be brought up at the Pre-Construction Conference.

D. Samples:

- 1. One sample of each type of material to be used on this project shall be provided at the Pre-Construction Conference.

E. Color Samples of Kynar 500 (Hylar 5000) finishes from manufacturer standard color selections. A minimum of twelve (12) color selections shall be provided.

F. Drains and Accessories

1. Existing Drains

- a. New Clamping rings, stainless steel bolts and metal strainers.

2. New Drains

G. Material Safety Data Sheets (MSDS): Submit Material Safety Data Sheets with each specification section and include with Safety Plan in accordance with Section 01 52 05, Safety Requirements.

1.05 CONFORMANCE AND COMPATIBILITY

A. The contractor shall ensure all materials provided are compatible with the other components of the system, are acceptable for the specified use, and meet the requirements of the specifications.

B. Coordinate sheet metal and attachment with wood treatment of rough carpentry in accordance with Section 06 10 00, Rough Carpentry.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery:

- 1. Package and protect materials during shipment.

- 2. Materials shall be delivered to the site in an undamaged condition, and in a timely order for incorporation in the work.

B. Storage:

- 1. Do not store more materials on the roof than can be installed the same day and remove unused materials at the end of each day.

2. Materials shall be stored, handled, and installed in a manner to protect them from all damage during the entire construction period.
3. Immediately remove damaged materials from the job site and replace with new material.

C. Handling:

1. Materials shall not be laid on newly installed roof or in areas prone to blow or fall off the roof.

1.07 DIFFERING SITE CONDITIONS

- A. The contractor will notify the Consultant/Engineer immediately of any unforeseen site condition.
- B. The contractor will be required to secure the areas and dry-in the roofing system at no cost to the Owner until the problem is resolved.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: Shall conform to the respective reference specifications and other requirements specified herein.
- B. Edge metal systems shall adhere to the general requirements of ANSI/SPRI ES-1, 2003.
- C. Sheet Metal:
 1. Furnish sheet metal items in 8 to 10 foot lengths.
 2. Vertical face of sheet metal components shall be a minimum of 4 inches unless otherwise indicated or approved.
 3. Single pieces less than 8 feet may be used to connect shop fabricated inside and outside corners and at end runs.
 4. Provide accessories and other items essential to complete the sheet metal installation.
 - a. These accessories shall be made of the same material as the items to which they are applied.
 5. Fabricate sheet metal items of the materials specified and to the gage, thickness, or weight as specified, unless required by SMACNA to be heavier gage or size.

6. Finish:
 - a. Provide Kynar 500 (Hylar 5000) finish for all exposed sheet metal items unless otherwise indicated. Color shall be as selected by Owner.
7. Exterior vertical face of sheet metal components shall extend a minimum of 1 1/2-inch below blocking.

2.02 TYPES AND GAGES OF METALS

- A. Steel Sheet, Galvalume AZ50, gage as specified for specific components below:
 1. 24 gage (counterflashings, edge metals, wall panels, and copings for parapet walls up to 18" wide)
 2. 22 gage (copings for parapet walls up to 24" wide)
- B. Aluminum Sheet ASTM B 209, thickness as specified for specific components below:
 1. 0.040 inches (counterflashings, edge metals, walls panels, and copings for parapet walls up to 18" wide)
 2. 0.050 inches (copings for parapet walls up to 24" wide)
- C. Lead (for boots / drains):
 1. Grade B, minimum weight 4 lbs per square foot.
- D. Stainless Steel or Copper (for pitchpans / penetrations):
 1. ASTM A 167, Series 302 or 304, 22 gage and soldered.
 2. 16 oz. min., cold rolled, and soldered.
- E. Cleats:
 1. 1 gage/thickness heavier than metal attached; 22 gage maximum for galvalume cleats, 0.050 inches maximum for aluminum cleats.
- F. Use the same metal or a metal compatible with the item fastened when connecting to existing metal.
- G. Gutter Material Gage / Thickness:
 1. The sheet metal gage/ thickness for gutter metal shall be as described below in direct relation to each gutter's girth/ width of unformed metal stock.
 - a. 20-inch and less; 24 gage galvanized (Galvalume) or 0.040-inch Aluminum
 - b. 21-inch to 25-inch; 22 gage galvanized (Galvalume) or 0.050-inch Aluminum

2.03 OTHER MATERIALS

- A. Asphalt Roof Cement: ASTM D 4586, Type II.
 - B. Asphalt Primer: ASTM D 41 D 41 M.
 - C. Fasteners:
 - 1. Fasteners shall be compatible with the materials being fastened and shall provide for secure, firm attachment.
 - 2. Exposed fasteners shall have domed head with integral metal washer and rubber gasket.
 - 3. Fasteners shall be hot dipped galvanized steel, stainless steel, bronze or copper as a minimum.
 - 4. Only stainless steel fasteners shall be used to connect dissimilar metals.
 - D. Membrane Liner and Waterproof Underlayment:
 - 1. Smooth surfaced modified bitumen meeting ASTM D 1970 / D 1970 M for waterproof underlayment is required.
 - 2. Ensure product is compatible with roof membrane and membrane adhesives.
 - E. Breathable Underlayment:
 - 1. A # 30 felt or approved equal.
 - F. Butyl Tape:
 - 1. Double-sided butyl tape of width as required.
 - G. Aluminum Termination Bar:
 - 1. One (1) inch x 1/8 inch thick with slotted holes a minimum of 6 inches on center.
 - H. Gutter Brackets (clad with prefinished sheet metal)
 - 1. 1" x 3/16" aluminum bar.
 - I. Metal Wall Liner Panels:
 - 1. Pre-finished, corrugated metal wall panels, minimum 24 gage, meeting metal criteria of this section.
- OR
- 2. Pre-finished, interlocking metal wall panels with hidden clips meeting metal criteria of this section.

J. New Roof Drains:

1. Provide new cast iron drain assembly and leader connection. The drain shall be an adjustable height drain configuration.
2. As a minimum, the drain shall adhere to the International Plumbing Code Requirements, meet ASTM A48, Class 25 and ANSI/ASME A112.6.4, Roof, Deck and Balcony Drains, and paint coated.
3. Assembly shall include cast iron drain bowl, clamping ring, metal strainer and accessories required for complete installation. "No Hub" connectors are not acceptable.
4. Drain bowl connections to drain pipes shall be packed/filled with steel wool and leaded.

K. Existing Drains:

1. Provide stainless steel bolts, cast iron clamping ring and metal strainer at all drains.
2. Strainer configuration shall be compatible with and lock to existing drain.
3. ASTM A48, Class 25 and ANSI/ASME A112.6.4, Roof, Deck and Balcony Drains, and paint coated.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Requirements:

1. Provide new metal for all work unless otherwise indicated.
2. Make surfaces to receive sheet metal plumb and true, clean, even, smooth, dry and free of defects and projections, which might affect application.
3. For installation of items or criteria not provided, refer to NRCA Construction Details, Fifth Edition and SMACNA Architectural Sheet Metal Manual, Sixth Edition.
4. Provide sheet metal flashing in angles formed where roof decks abut walls, curbs, ventilators, pipes, or other vertical surfaces and wherever indicated and necessary to make the work watertight.
5. Join sheet metal together as indicated.
6. Increase attachment of all components by 100% at corner locations as defined by ASCE-7.

7. All materials indicated to be reused shall be removed without damage and stored for protection until required.
8. Where existing components to be reused do not provide for minimum 4 inch vertical flashing face, install flashing skirt of compatible materials and attach securely in a watertight and water shedding manner.
9. Provide pre-fabricated inside and outside corners at all sheet metal intersection pieces.
10. Sheet metal shall be fabricated to conform to the contours of surfaces to which applied.
11. All sheet metal to have waterproof membrane underlayment installed behind or below the metal components. Waterproof underlayment shall have minimum 4 inch laps and sealed at all terminations and penetrations.
12. Provide conforming sheet metal closures at all flashing termination conditions.
13. Provide accessories and fastenings as required to provide a securely attached, watertight construction.
14. Where sheet metal components are to be embedded in the roofing system, prime both sides of all metal flanges prior to installation.

B. Workmanship:

1. Make lines, arises and angles sharp and true.
2. Free exposed surfaces from visible wave, warp and buckle and tool marks.
3. Fold back exposed edges neatly to form a 1/2-inch hem on concealed side.
4. Make sheet metal exposed to the weather watertight with provisions for expansion and contraction.

C. Nailing:

1. Confine nailing of sheet metal generally to sheet metal only where noted or specified.
2. Confine nailing of flashing to one edge only.
3. Space nails 4 inches on center and staggered or as otherwise indicated.
4. Face nailing will not be permitted.
5. Nailers are specified in Section 06 10 00, Rough Carpentry.

D. Continuous Cleats:

1. Provide continuous cleats where indicated or specified.
2. Cleats shall be of the same material as material being attached and one gage/increment thicker.
3. Form with integral drip to engage sheet metal to be attached.
4. Attach securely at maximum 6 inches on center, increased to 3 inches on center at corners as defined by ASCE-7.
5. Kick out shall receive 3/4 inch wide lock.

E. Attachment Clips (Wind Cleats)

1. Space clips for counterflashing and raised metal edges evenly not over 24 inches on center and 12 inches on center at corners.
2. Clips shall be not less than 2 inches wide and 6 inches long and of the same metal and 1 gage thicker as the sheet metal being installed.
3. Secure one end of the clip with two fasteners and the cleat folded back over the heads.
4. Lock the bottom end onto the newly installed counterflashing a minimum of 1/2 inch.

F. Rivets and Screws:

1. Install where indicated or required.
2. Provide compatible fasteners and washers where required to protect surface of sheet metal and to provide a watertight connection.
3. Rivets shall be one inch on center unless noted otherwise. Rivets shall be sealed with compatible sealant and match sheet metal finish.

G. Seams:

1. Lap Seams:
 - a. Overlap seams of flashing not less than 4 inches, or as otherwise indicated.
 - b. Completely and neatly fill the joints with two strips of 1/8 inch by 1/2-inch partially cured butyl tape or butyl sealant in an approved manner.

2. Standing Seams:
 - a. Not less than 1 inch high, single-lock with sealant.
 - b. Coped side lap with two beads of butyl sealant for coping and cap flashing sheet metal.
 - c. Coping: As indicated on the drawings.
3. Soldering:
 - a. Soldering is required and shall be done in accordance with SMACNA criteria for all metals that can be soldered.

H. Protection from Dissimilar Metals:

1. Paint with heavy-bodied bituminous paint or apply butyl tape, surfaces in contact with dissimilar metal, or separate the surfaces by means of waterproof underlayment as approved by Consultant/Engineer.
2. Any wood, nailers or other rough carpentry using Copper Azole (CA), Alkaline Copper Quaternary (ACQ) or Micronized Copper Quaternary (MCQ) treatment will require verification of the following:
 - a. Separation of metal roof, metal wall and sheet metal from the roof carpentry is required using waterproof underlayment as a minimum.
 - b. Type of fasteners acceptable for attachment into these woods (such as stainless steel).
 - 1) Fasteners for wood to wood connectors.
 - 2) Fasteners thru metal into wood.

I. Expansion and Contraction:

1. Provide expansion and contraction joints at not more than 40 foot intervals for metal.
2. Where the distance between the last expansion joint and the end of the continuous run is more than half the required interval, an additional joint shall be required.
3. Space joints evenly.

3.02 SPECIFIC COMPONENTS

A. Counterflashing and Skirts:

1. All existing counterflashing noted to be reused shall be carefully removed and stored until reinstallation.

2. All damaged sheet metal or missing metal, or material damaged during removal, which would restrict watertight application or provide unsightly appearance as determined by the Consultant/Engineer shall be replaced, at no cost, with new, matching materials.
3. Form the flashing to the required shapes before installation. Provide 4 inch vertical face, minimum, unless otherwise indicated.
4. Metal work shall adhere to details shown.
5. All inside and outside corners and termination pieces shall be shop fabricated.
6. Cleats and locking clips to be one gage/increment thicker than metal being attached.

B. Reglets:

1. Care should be taken not to damage existing reglet /counterflashing when cutting counterflashing and installing new materials.
2. All damaged sheet metal or missing metal, or material damaged during removal, which would restrict watertight application or provide unsightly appearance as determined by the Consultant/Engineer shall be replaced, at no cost, with new, matching materials.
3. After completion of all base and counterflashing work, the sealant of all reglets shall be completely removed, the area cleaned, and new sealant installed as specified in Section 07 92 00, Sealants for Roofing and Sheet Metal.
4. Any damaged reglet or counterflashing shall be repaired to match existing.
5. New reglets shall be cut 1-1/4 inch deep.
6. Sheet metal shall be fabricated with friction cleat and supplemented with lead wedge anchorage.

C. Copings:

1. Provide sheet metal coping as indicated and with termination closure flashing.
2. Edge metals/closures/copings shall have waterproof underlayment installed under coping and turned down minimum 3 inches each side of wall, and extend over wall assembly a minimum of 1 1/2 inches.
3. Coping shall have continuous firm support using non hygroscopic materials sloped to promote positive drainage.

4. Continuous cleats, one gage/increment thicker than metal coping, shall be installed on interior and exterior sides.
5. Sheet metal coping shall be attached with continuous cleats on outer face and screw fastening at maximum 12 inches on center on inner face, unless otherwise indicated or approved.
6. Joints methods shall be as indicated on drawings.
7. All inside and outside corners shall be pre-fabricated with 12-inch legs in each direction measured from inside corner.

D. Cap Flashing

1. Install cap flashing curbing as indicated.
2. Provide continuous, firm support sloped using non hydroscopic materials to promote positive drainage.
3. Install waterproof underlayment over top of support construction and turn down vertical faces and up adjoining wall construction 3 inches, minimum.
4. Seal seams and laps in membrane liner.
5. Install sheet metal cap flashing with joints as indicated.
6. Terminate with prefabricated sheet metal closures.
7. Attach cap flashing as indicated with continuous cleats and screw fastening.

E. Embedded Edge Metal

1. Prefabricate in the shapes indicated.
2. Extend flange at least 4 inches on to roofing.
3. Provide a minimum 4 inch vertical face and extend a minimum 1 ½ inch over wall assembly.
4. At gutter locations, provide a minimum 4-inch vertical face, notched at each spacer, with a minimum 3-inch lap over gutter.
5. Joints methods shall be as indicated on drawings.
6. Prime bottom side of flange with primer and allow to dry.
7. Set primed flange in full bed of mastic/sealant on roof membrane and nail securely to wood nailer with appropriate fasteners a minimum of 1.5 inches long spaced not more than 4 inches on center and staggered.

8. Six (6) wide cover plate with hemmed edges set in two strips sealant/tape on each side of joint.
 9. Provide polymer clad metal for welded membrane application.
- F. Flashing at Roof Penetrations and Equipment Supports
1. Provide metal flashing for all pipes, ducts and conduits projecting through the roof surface and any equipment supports.
 2. No pitch pans/pockets are to be used unless specifically detailed and indicated including a sheet metal umbrella.
 3. Single Pipe Vents
 - a. Set primed flange of sleeve in a full bed of mastic/sealant and nail 4 inches on centers.
 - b. Bend the top of the sleeve down into the vent pipe a minimum of 1 inch.
 - c. Provide strip flashing of metal flange as specified and indicated.
- G. Metal Wall Liner Panels:
1. Provide a minimum breathable weather resistant barrier / underlayment in watershedding fashion behind panels.
 2. Provide treated wood or metal furring as indicated or necessary to accomplish specified work. Fasten furring to wall with appropriate fasteners.
 3. Provide and install wall panels.
 - a. Provide a bottom panel flashing shall be fabricated in a 2-piece condition to receive sheet metal counterflashing and shall be attached to wall with fasteners 12-inches on center.
 - b. Weather resistant barrier/ underlayment and the metal panels are to extend over the vertical leg of the bottom panel flashing a minimum of 3-inches.
 - c. Terminate the metal wall panels approximately 1-inch above the bottom panel flashing/ counterflashing receiver.
 - d. Provide and install wall panels using rubber gasket type stainless steel fasteners at top and bottom a maximum of 12-inches on center in between. Intermediate rows of fasteners should be spaced no more than 2 feet on center.
 - e. Metal coping/edge metal/counterflashing system to extend over top of metal wall panels a minimum 4-inches.

H. Roof Drain Flashing:

1. "No Hub" connectors are not permitted. Contractor is required to re-seal new drain assembly using lead method for cast iron drain pipes.
2. Temporarily plug drain when working in drain area. Remove debris from drain area prior to unplugging.
 - a. Remove plug from drain at the end of each day's construction or when inclement weather threatens.
3. Provide primed 30 inch metal sheet flashing indicated.
4. Ensure insulation tapers up from drain to a minimum 24 inches out at a minimum 1/2"/1' and a maximum of 1'/1'. Provide tapered filler to match field insulation thicknesses.
5. Coat primed drain bowl flange with mastic/sealant.
6. Run roof membrane over drain bowl flange.
7. Set primed lead flashing sheet centered over roof drain in mastic/sealant over membrane plies.
8. Strip in metal flashing sheet with membrane flashing system as indicated.
9. Clamp the roof membrane, metal flashing sheet and strip flashing under the drain clamping ring.
10. Secure clamping ring so that membrane and flashing are free of wrinkles and folds.
11. Clean drain line at completion of work.
12. Flood test each drain to ensure watertight condition.

I. Pitch Pans/Pitch Pockets

1. Pitch pans shall only be used in work where indicated on the drawings or approved by the Consultant/Engineer.
2. Existing pitch pan/pitch pockets shall be removed.
3. Mechanical/electrical/roof penetrations shall be disconnected and raised as required to provide proper flashing.
4. Pitch pan shall be fabricated from 20-ounce copper or 22-gage Series 302/304 stainless steel with all joints soldered or welded. A minimum 4-inch flange and 4 inch vertical height is required with one inch hemmed edge around top of entire pitch pan.

5. Bottom of pitch pan at deck shall be lined to permit pitch pan base to be filled with non-shrink grout. Prime inside of pitch pan before filling. The remaining portions of the pan shall be filled with pourable sealer adhered to walls of pan and penetration. Sealer shall be tapered to promote drainage.
6. A sheet metal umbrella or collar shall be fabricated to fit over the pitch pan and be sealed at penetration connection.

J. Mechanical Curbs

1. Provide new wood curb and prefabricated metal gravity vent base sized to receive throat of vent hood to be reused.
2. Rivet seams a minimum of one inch on center.
3. Solder all seams watertight.
4. Fasten to new wood curb using compatible fasteners at a maximum of 8-inches on center and a minimum of two fasteners per side.
5. All curbs shall provide a minimum base flashing height of 8 inches above finished roof membrane.

K. Self-Flashing Curbs/Bases

1. Where self-flashing curbs or penetration base is to be installed, provide new to match existing configuration and sized to fit component and allow for proper counterflashing installation.
2. Prime flanges prior to setting.
3. Anchor securely to decking.
4. Provide watertight membrane flashing.

L. Existing Vents, Hoods, and other Exposed Sheet Metal Components to Remain

1. Remove dirt and rust.
2. Prepare surface, prime and provide two (2) coats galvanized or aluminized paint compatible with material.

M. Overflow Scupper:

1. Prefabricate scupper sleeve from minimum 24 gage series 302/304 stainless steel.
2. Fabricate to ensure any seams in pan are positioned in top of scupper pan.
3. Solder all seams watertight.

4. Prime both sides of flanges prior to installation.
5. Set flanges in bed of roof cement.
6. Fasten and strip flash.
7. Provide sheet metal 'flaps', with Kynar finish to match exterior wall color.
8. Exterior Flashing/Collar
 - a. Fabricate collar from same metal as coping.
 - b. Provide 1/2-inch hemmed edge on all 4 sides.
 - c. Set collar in 2 strips of adhesive or butyl tape on all sides.
 - d. Secure in place with stainless steel fasteners.
 - e. Provide counterflashing above.

N. Gutters:

1. Type, shape and size shall be as indicated on drawings.
2. Gutters shall be hung type of shape indicated and supported on underside by brackets.
3. Provide gutters in sizes indicated complete with mitered corners, end caps, outlets, brackets, spacers, and other accessories necessary for installation.
4. Outer rim of gutter shall be a minimum 1-inch lower than the back wall of gutter. Any fastening through the back wall of gutter shall cover a minimum of 1/2-inch higher than the outside face of the gutter system.
5. Bead or reinforce the outer edge of gutter with a stiffening bar not less than 3/4 inch by 3/16-inch of material compatible with gutter.
6. Fabricate gutters in sections not less than 8 feet.
7. Gutters shall have a minimum 4-inch lap with two strips of partially cured butyl tape or butyl sealant within the lap seams and riveted one inch on center between the tapes. Joints shall be fabricated to remain watertight.
8. Install gutter expansion joint between downspouts at maximum 50 feet between expansion joints. Provide for positive drainage of gutter.
9. Join the gutters by riveted and sealed/soldered joints, soldered if possible. Provide expansion-type joints midway between outlets.
10. Install gutters below slope line of the roof so that snow and ice can slide clear.

11. Hang gutters on adjustable support brackets, spaced not more than 30 inches on center and spacers 30 inches on center, staggered between supports. Brackets shall be pre-finished or wrapped in sheet metal to match the gutter metal. Brackets shall also be a minimum 1 inch by 3/16-inch aluminum or 1 inch by 1/8-inch galvanized bar stock. Brackets of the same material shall have extension over top of the gutter (every fourth bracket) and secured thru edge metal, similar to FM 1-49 requirement.
 12. Adjust gutters to slope uniformly to outlets, with high points occurring midway between outlets.
 13. Fabricate hangers and fastenings from metals compatible with the gutter material. See Tables in SMACNA manual, if not noted otherwise.
 14. Install stainless steel bee-hive strainers above downspout openings.
- O. Downspouts:
1. Type, shape and size shall be as indicated on drawings.
 2. Provide complete offsets and elbows.
 3. Provide downspouts in approximate 10-foot lengths.
 4. Provide end joints to telescope not less than 1/2-inch and lock longitudinal joints with fasteners two inches on center.
 5. Fasteners shall not extend into downspout more than one inch.
 6. Keep downspouts not less than 1 inch from walls.
 7. Fasten to walls at top, bottom, and at 5 feet on center intervals.
 8. Form straps and fasteners of metal compatible with the downspout materials and of same color finish.
 9. Provide elbows at wall projection/step out.
 10. Termination into splash blocks/pans.
 - a. Provide concrete splash block at grade.
 - b. Provide metal splash pan with flow deflectors where downspout discharges on rooftop.
 - c. For connections to storm drain, provide transition conductors to allow for overflow drainage and neatly fit downspouts into sub-grade drainage connections.
 11. Provide terminating downspouts with elbow type fittings as indicated on the drawings.

P. Closure Conditions:

1. Provide prefabricated sheet metal closures at all flashing terminations to ensure a watertight condition.
2. A minimum three inches of coverage between/over the components shall be provided.
3. Metal copings shall have waterproof underlayment installed under coping and turned down minimum 3 inches each side of wall, and extend over wall assembly a minimum of 1 1/2-inch.
4. Metal counterflashings shall provide a minimum of 3" coverage over component being flashed.

3.03 UNIT PRICED QUANTITIES

- A. In accordance with Section 01 21 10, Unit Prices and Allowances, the Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.
- B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.
- C. Provide photograph or videotape documentation of repairs.
- D. Locate quantities and show their locations on the applicable drawings.
- E. Provide actual used quantities on each Application for Payment request.

END OF SECTION 07 60 00

SECTION 07 92 00

SEALANTS FOR ROOFING AND SHEET METAL

PART 1 - GENERAL

1.01 SUMMARY

- A. Work in this section includes all sealant work required for this project specific to the roofing, sheet metal and adjoining surfaces.

- 1. Roofing and Sheet Metal

1.02 RELATED REQUIREMENTS

- A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
- B. Section 02 04 00: Cutting and Patching
- C. Section 02 05 00: Demolition and Removal
- D. Section 07 60 00: Sheet Metal

1.03 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced, and to provide any clarifications for issues not covered within this specification.
- B. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):
 - 1. ASTM C 1193 (2005) Standard Guide for Use of Joint Sealants
 - 2. ASTM C1472 (2006) Standard Guide for Calculating Movement and Other Effects When Establishing Sealant Joint Width
 - 3. ASTM C 717 (2007) Standard Terminology of Building Seals and Sealants
 - 4. ASTM C 920 (2011) Elastomeric Joint Sealants
- C. SEALANT WATERPROOFING RESTORATION INSTITUTE:
 - 1. Sealants Handbook
 - 2. Sealants: The Professional's Guide, Sealant, Waterproofing & Restoration Institute, 1995.

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittals.

- B. No work will begin until all submittals have been received and approved and Pre-Construction Conference has been completed.
- C. Manufacturer's Catalog Data
 - 1. Sealants/Tapes
 - 2. Primers
 - 3. Backstop materials
 - 4. Data for the sealants shall include shelf life, recommended cleaning solvents, modulus and type cure.
- D. Manufacturer's Standard Color Chart
 - 1. Sealants:
 - a. Color to match sheet metal and adjoining surface.
- E. Manufacturer's Instructions
 - 1. Sealants/Tapes: Submit application instructions, precautions and mixing instructions for multi-component sealants.
- F. Samples
 - 1. Sealants: Submit one tube of each color for each sealant type to be used.
- G. Sample Installations:
 - 1. Finished Joint:
 - a. Before sealant work is started, submit a sample of each type of finished joint where directed.
 - b. Sample shall show the workmanship, bond and color of sealant.
 - c. The workmanship, bond and color of sealant throughout the project shall match the approved sample joints.
- H. Certificates of Compliance
 - 1. Sealants/Tapes
 - 2. Primers
 - 3. Bond breakers
 - 4. Backstops

5. Submit certificates from the manufacturers attesting that materials meet the specified requirements and compatible for specified use.
- I. Material Safety Data Sheets (MSDS): Submit Material Safety Data Sheets with each specification section and include with Safety Plan in accordance with Section 01 52 05, Safety Requirements.

1.05 ENVIRONMENTAL CONDITIONS

- A. The ambient temperature shall be within the limits of 40 and 100 degrees F when sealant is applied.

1.06 DELIVERY AND STORAGE

- A. Delivery:
 1. Deliver materials to the job site in unopened in manufacturers' external shipping containers, with brand names, date of manufacture, color, and material designation clearly marked thereon.
 2. Elastomeric sealant containers shall be labeled to identify type, class, grade and use.
 3. Carefully handle and store materials to prevent inclusion of foreign materials or subjection to sustained temperatures exceeding 100 F degrees or less than 40 degrees F.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Provide sealant that has been tested and found suitable for the substrates to which it will be applied.
- B. Exterior Sealant:
 1. Provide a low to medium modulus silicone based or polyurethane based with a neutral cure.
 2. ASTM C 920, grade NS, Class 25. "Use" based on adjoining materials.
 3. Type – A type S, single component, or type M, multi-component may be used.
 4. Locations and Colors for Sealants
 - a. Colors will be selected from standard color charts after mock-ups for each condition field of at least 3 choices is provided.
 5. Class
 - a. A Class 25 shall be provided unless specifically approved or noted otherwise.

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6. Use
 - a. Sealant use for each condition or application shall adhere to use classification of ASTM C 920.
7. Locations
 - a. Tie-in of sheet metal to various wall types at terminations.
 - b. Metal reglets, where existing flashing extends into various types.
 - c. Metal to metal joints where sealant is indicated or specified.

C. Sealant Tapes for Sheet Metal Laps:

1. Provide a partially cured butyl tape, thickness 1/8 inch by a minimum of 1/2 inch wide.
2. Locations shall be as follows:
 - a. Lap joints of all metals.
 - b. Beneath cover plates of cap and counterflashings.
 - c. Where noted or specified elsewhere.

2.02 PRIMER FOR SEALANT

- A. Provide a non-staining, quick drying type and consistency recommended by the sealant manufacturer for the particular application.

2.03 BOND BREAKERS

- A. Provide the type and consistency recommended by the sealant manufacturer for the particular application.

2.04 BACKSTOPS

- A. Provide glass fiber roving or neoprene, butyl, polyurethane or polyethylene foams free from oil or other staining elements as recommended by sealant manufacturer.
- B. Backstop material shall be compatible with sealant.
- C. Do not use absorptive materials.

2.05 CLEANING SOLVENTS

- A. Provide type recommended by the sealant manufacturer.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

- A. Surfaces shall be clean, dry to the touch, and free from dirt, frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would tend to destroy or impair adhesion.
- B. When resealing an existing joint remove existing caulking/sealant prior to apply new sealant.
- C. Prepare surface in strict accordance with manufacturers printed instructions.

3.02 APPLICATION OF SEALANTS

A. Joint Width to Depth Ratio:

1. Acceptable Ratios:

	<u>Joint Width</u>	
	Minimum	Maximum
Conc./	1/4"	1"
Masonry	1/4"	1"

B. Backstops:

1. Install backstops dry and free of tears or holes.
2. Tightly pack the back or bottom of joint cavities with backstop material to provide a joint of the depth specified.
3. Install backstops in the following locations:
 - a. Where indicated.
 - b. Where backstop is not indicated but joint cavities exceed the acceptable maximum depths specified in paragraph entitled, "Joint Width to Depth Ratios".

C. Primer:

1. Immediately prior to application of the sealant, clean out dust/dirt/loose particles from joints.
2. Where recommended by sealant manufacturer, apply primer to joints in concrete, masonry and metal surfaces in accordance with sealant manufacturer's instructions.
3. Do not apply primer to exposed finish surfaces.

D. Bond Breaker:

1. Provide bond breakers to the back or bottom of joint cavities, as recommended by the sealant manufacturer for the type joint and sealant specified.
2. Carefully apply the bond breaker to avoid contamination of adjoining surfaces or breaking bond with surfaces other than those covered by the bond breaker.

E. Sealants:

1. Provide a sealant compatible with the materials to which it is applied.
2. Do not use a sealant that has exceeded its shelf life or has jelled and cannot be discharged in a continuous flow from the gun.
3. Apply the sealant in accordance with the manufacturer's instructions with a gun having a nozzle that fits the joint width.
4. Force sealant into joints to fill the joints solidly without air pockets.
5. Tool sealant after application to ensure adhesion.
6. Sealant shall be uniformly smooth and free of wrinkles.
7. Upon completion of sealant application, roughen partially filled or unfilled joints, apply sealant and tool smooth as specified.

3.03 APPLICATION OF BUTYL TAPES

- A. Surfaces shall be cleaned and prepared as noted below.
- B. No exposed applications of butyl tapes/sealants are permitted.
- C. At each lap, provide 2 continuous applications of tape approximately 1 inch apart within the lap.
- D. Directly after tapes are installed, set and secure metal.

3.04 PROTECTION AND CLEANING

A. Protection:

1. Protect areas adjacent to joints from sealant smears.
2. Masking tapes may be used for this purpose, if removed 5 to 10 minutes after joint is filled.

B. Final Cleaning:

1. Masonry and Other Porous Surfaces:

- a. Immediately scrape off fresh sealant that has been smeared on masonry and rub clean with a solvent as recommended by the sealant manufacturer.
 - b. Allow excess sealant to cure for 24 hours then remove by wire brushing or sanding.
2. Metal or Non-Porous Surfaces:
- a. Remove excess sealant with a solvent-moistened cloth.

3.05 UNIT PRICED QUANTITIES

- A. In accordance with Section 01 21 10, Unit Prices and Allowances, the Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.
- B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.
- C. Provide photograph or videotape documentation of repairs.
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END OF SECTION 07 92 00

DRAWINGS

