PROJECT MANUAL

FOR

UNIVERSITY OF
SOUTH CAROLINA

STATE PROJECT NO. H27-Z155

Thomson Student Health Center
Roof and Wall Renovations

1409 Devine St. Columbia, SC 29208

May 22, 2014

REI PROJECT NO. 14CHS-012

SC Engineers COA #1906

REI ENGINEERS

44 MARKFIELD DRIVE, UNIT F CHARLESTON, SC 29407

PHONE 843.225.6272 FAX 843.225.6273

AN EMPLOYEE-OWNED COMPANY

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SECTION

TECHNICAL SPECIFICATIONS

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2011 Edition
Rev. 7/20/2011

SE-310
REQUEST FOR ADVERTISEMENT

PROJECT NAME: Thomson Student Health Center Roof and Wall Renovations

PROJECT NUMBER: H27-Z155

PROJECT LOCATION: Columbia, 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: $500K - $800K

DESCRIPTION OF PROJECT: Roof replacement and wall renovation Project. Refer to Section 01 11 00-Summary of Work of the bid documents. Bidders are responsible for obtaining bidding documents from the purchasing website: http://purchasing.sc.edu.

A/E NAME: REI Engineers

A/E CONTACT: Keith Parker

A/E ADDRESS: Street/PO Box: 44 Markfield Drive, unit F
City: Charleston
State: SC ZIP: 29207-____

EMAIL: kparker@reiengineers.com

TELEPHONE: 843.225.6272 ext. 103 **FAX:** 843.225.6273

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

BIDDING DOCUMENTS/PLANS MAY BE OBTAINED FROM: http://purchasing.sc.edu (See Facilities Construction Solicitations & Awards)

PLAN DEPOSIT AMOUNT: _____ **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: 6/26/2014 **TIME:** 10am **PLACE:** 743 Greene St, Conf Rm 53, Columbia, SC 29208

AGENCY: University of South Carolina

NAME OF AGENCY PROCUREMENT OFFICER: Juaquana Brookins

ADDRESS: Street/PO Box: 743 Greene Street
City: Columbia
State: SC ZIP: 29208-____

EMAIL: jbrookin@fmc.sc.edu

TELEPHONE: 803.777.3596 **FAX:** 803.777.7334

BID CLOSING DATE: 7/8/2014 **TIME:** 1pm **LOCATION:** 743 Greene St, Conf Rm 53, Columbia, SC 29208

BID DELIVERY ADDRESSES:

HAND-DELIVERY:

Attn: Juaquana Brookins
USC - Facilities
743 Greene Street
Columbia, SC 29208

MAIL SERVICE:

Attn: Juaquana Brookins
USC - Facilities
743 Greene Street
Columbia, SC 29208

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

A701

Instruction to Bidders

(1997 Edition)

Original AIA Document on file at the office of

University of South Carolina

743 Greene Street

Columbia, South Carolina 29208

OSE FORM 00201

Revised October 22, 2012

STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

OWNER: University of South Carolina
PROJECT NUMBER: H27-Z155
PROJECT NAME: Thomson Student Health Center Roof and Wall Renovations
PROJECT LOCATION: Columbia, SC

PROCUREMENT OFFICER: Juaquana Brookins

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.

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

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

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.

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 shall be used for both Alternates and Base Bid Work if Alternates are accepted.

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

4.1.6 Pursuant to Title 11, Chapter 35, Section 3020(b)(i) of the South Carolina Code of Laws, as amended, Section 7 of the Bid Form sets forth a list of subcontractor specialties for which Bidder is required to 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.

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.

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

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

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

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

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

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

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

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

6.1 CONTRACTOR'S RESPONSIBILITY

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

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

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: USC Facilities/Construction Solicitations & Awards website
Building Where Posted:
Address of Building:
WEB site address (if applicable): http://purchasing.sc.edu
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.

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

_____
_____
_____
_____
_____

END OF DOCUMENT

AIA 310

Bid Bond

(2010 Edition)

Original AIA Document on file at the office of

University of South Carolina

743 Greene Street

Columbia, South Carolina 29208

SE-330 – LUMP SUM BID
BID FORM

Rev. 9/21/2011

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 Thomson Student Health Center Roof and Wall Renovations

PROJECT NUMBER H27-Z155

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)*****:** Refer to Section 01 11 00 of the bid documents.

_____, which sum is hereafter called the Base Bid.

(Bidder - insert Base Bid Amount on line above)

SE-330 – LUMP SUM BID
BID FORM

Rev. 9/21/2011

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

ALTERNATE # 1 *(Brief Description)*: NA

☐ **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)*: NA

☐ **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)*: NA

☐ **ADD TO** or ☐ **DEDUCT FROM BASE BID:**_____

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

ALLOWANCES:

Include in the Base Bid the Quantity Allowances specified in Section 01 21 00 of the Project Manual.

Replace 1,500 Cubic Feet of Damaged or Deteriorated Lightweight Concrete ... $ _____
Replace 200 Cubic Feet of Damaged or Deteriorated Structural Concrete ..... $ _____
Replace 1,000 Board Feet of Wood Nailers ..... $ _____
Provide 200 Linear Feet of Additional Manufacturer's Walk Pad Material ..... $ _____
Replace 160 Board Feet of Damaged or Deteriorated Wood Deck ..... $ _____
Replace 100 Square Feet of Damaged or Deteriorated Steel Deck ..... $ _____
Repair 745 Square Feet of Steel Deck with Coating ..... $ _____
Grind and tuck point 250 Linear Feet of spalled mortar at brick ties ..... $ _____
Grind and tuck point 210 Linear Feet of spalled mortar at shelf angles ..... $ _____
Tuck point 800 Linear Feet of cracked or deteriorated mortar joints ..... $ _____

UNIT PRICES:

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the scope of the work all in accordance with the contract documents.

UP-1: Repair Damaged or Deteriorated Lightweight Concrete Fill ..... $ _____ /CF
UP-2: Repair Damaged or Deteriorated Structural Concrete ..... $ _____ /CF
UP-3: Provide New Wood Blocking ..... $ _____ /BF
UP-4: Provide Additional Manufacturer's Walk Pad Material ..... $ _____ /LF
UP-5: Replace Damaged or Deteriorated 2-3/4" thickness Wood Decking .....$ _____ /BF
UP-6: Replace Damaged or Deteriorated Steel Deck ..... $ _____ /SF
UP-7: Repair Steel Deck with Coating ..... $ _____ /SF
UP-8: Grinding and tuck pointing of spalling mortar at brick ties ..... $ _____ /LF
UP-9: Grinding and tuck pointing of spalling mortar at shelf angles ..... $ _____ /LF
UP-10: Tuck pointing of cracked or deteriorated mortar joints .....$ _____ /LF

SE-330 – LUMP SUM BID

Rev. 9/21/2011

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**
Masonry		
ALTERNATE 1		
ALTERNATE 2		
ALTERNATE 3		

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.

§ 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 **90** 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 $500.00for 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
Rev. 9/21/2011

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: _____

ADRESS: _____

_____

BY:_____ **DATE:**_____
(Signature)

TITLE:_____

TELEPHONE:_____

EMAIL: _____

A101

Standard form of Agreement Between Owner and Contractor

(2007 Edition)

Original AIA Document on file at the office of

University of South Carolina

743 Greene Street

Columbia, South Carolina 29208

OSE FORM 00501

Rev. 7/11/2011

STANDARD MODIFICATIONS TO AGREEMENT BETWEEN OWNER AND CONTRACTOR

OWNER: University of South Carolina
PROJECT NUMBER: H27-Z155
PROJECT NAME: Thomson Student Health Center Roof and Wall Renovations

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%)."

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: Tom Opal
Title: Sr. Project Manager
Address: 743 Greene St, Columbia, SC 29208
Telephone: 803.777.7076 **FAX:** _____
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: Dale Branham
Title: Manager - Preventative Maintenance
Address: 743 Greene St, Columbia, SC 29208
Telephone: 803.777.1288 **FAX:** _____
Email: branhamd@fmc.sc.edu

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

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

Name: _____
Title: _____
Address: _____
Telephone: _____ **FAX:** _____
Email: _____

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

Name: _____
Title: _____
Address: _____
Telephone: _____ **FAX:** _____
Email: _____

2.14. *Add the following Section 8.6.1:*

8.6.1 The Architect's representative:

Name: Keith Parker
Title: Project Manager
Address: 44 Markfield Dr., Unit F
Telephone: 843.225.6272 **FAX:** 843.225.6273
Email: kparker@reiengineers.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

A201

General Conditions of the Contract for Construction

(2007 Edition)

Original AIA Document on file at the office of

University of South Carolina

743 Greene Street

Columbia, South Carolina 29208

OSE FORM 00811
Rev. 9/7/2011

STANDARD SUPPLEMENTARY CONDITIONS

OWNER: University of South Carolina
PROJECT NUMBER: H27-Z155
PROJECT NAME: Thomson Student Health Center Roof and Wall Renovations

1 GENERAL CONDITIONS

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

2 STANDARD SUPPLEMENTARY CONDITIONS

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

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

3 MODIFICATIONS TO A201-2007

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

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

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

3.3 *Add the following Section 1.1.9:*

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

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

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

3.5 *Delete Section 1.5.1 and substitute the following:*

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

3.6 *Delete Section 2.1.1 and substitute the following:*

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

3.7 *Delete Section 2.1.2 and substitute the following:*

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

3.8 *Delete Section 2.2.3 and substitute the following:*

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

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

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

3.10 *Delete Section 2.2.5 and substitute the following:*

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

3.11 *Add the following Sections 2.2.6 and 2.2.7:*

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

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

3.12 *Delete Section 2.4 and substitute the following:*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

acceptable to the Owner,

3.22 *Delete Section 3.9.2 and substitute the following:*

3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner the name and qualifications of a proposed superintendent. The Owner may reply within 14 days to the Contractor in writing stating (1) whether the Owner has reasonable objection to the proposed superintendent or (2) that the

Owner requires additional time to review. Failure of the Owner to reply within the 14-day period shall constitute notice of no reasonable objection.

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

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

3.24 *Delete Section 3.10.3 and substitute the following:*

3.10.3 Additional requirements, if any, for the 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 Contactor 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 before the opening words "The Contractors shall."*

3.29 Add the following Sections 3.13.2 and 3.13.3:

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

3.13.3 The Contractor and any entity for 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.

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

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;

.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:

.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.

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.

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,* d*elete 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

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.

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."*

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

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.

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 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.

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 to 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.

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 Caroline 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.

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

.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;

.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.

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 waive as against the Owner. Without limitation, this mutual waiver is applicable to all damages due to either party’s termination in accordance with Article 14. 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)

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

3.130 ***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.

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: _____

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 Specifications

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 Specifications

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 Specifications

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

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

SE-355 2011 Edition

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: Thomsons Student Health Center Roof and Wall Renovations

State Project Number: H27-Z155

Brief Description of Awarded Work, as found on the SE-330, Bid Form: Refer to Section 01 11 00 of the bid documents.

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

Name: REI Engineers

Address: 44 Markfield Dr., Unit F
Charleston, SC 29407

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
Rev. 8/9/2011

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 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

Project Name: Thomsons Student Health Center Roof and Wall Renovations

Project Number: H27-Z155

Brief Description of Awarded Work, as found on the SE-330, Bid Form: Refer to Section 01 11 00 of the bid documents.

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

Name: REI Engineers

Address: 44 Markfield Dr., Unit F
Charleston, SC 29407

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

Rev. 8/9/2011

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 o ne 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.

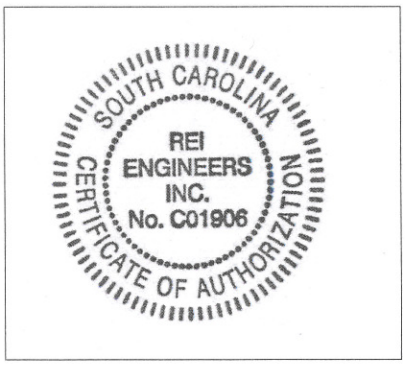
13.3 Contract: The agreement between the Agency and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

SECTION 00 01 07

SEALS PAGE

PROFESSIONAL ENGINEER

REGISTERED ROOF CONSULTANT



SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION

END OF SECTION 00 01 07

SECTION 00 01 10

TABLE OF CONTENTS

DIVISION 26 ELECTRICAL

CONTRACT DRAWINGS

END OF SECTION 00 01 10

SECTION 00 01 15

LIST OF DRAWINGS

PART 1 GENERAL

The following drawings and details are included as part of the Contract Documents:

Drawing	Description	Date
R-001	Cover Sheet	05-22-2014
R-101	Roof Plan	05-22-2014
R-102	Insulation Attachment Plan	05-22-2014
R-103	Exterior Wall Outline Plan	05-22-2014
R-104	Staging and Access Plan	05-22-2014
R-201	Roof Details	05-22-2014
R-202	Roof Details	05-22-2014
R-203	Roof Details	05-22-2014
R-204	Roof Details	05-22-2014
R-205	Roof Details	05-22-2014

END OF SECTION 00 01 15

SECTION 00 31 23

EXISTING ASBESTOS INFORMATION

FM00451411 *FM00451411* USC Work Order

Description HAZMAT SURVEY - BLDG 111

Site	COLUMBIA	**Assigned To**	JPROVENCE
Building	111 STUDENT HEALTH CENTER	**Crew**	HAZMAT
Floor	**Room:**	**Start Date**	19-MAR-14 **Priority** 5
Equipment		**Due date**	07-APR-14
		Request Date	06-MAR-14 **by** CAMOORE

Request # FM00451411 **Description** HAZMAT SURVEY - BLDG 111
Parent WO #

CP Number CP00399736 FY14 - STUDENT HEALTH - ROOF & WINDOW RENOVATIONS

State/Internal Project Number H27-Z155

Requestor	BRANHAM,DALE	**Project Manager**	BRANHAM, DALE
Telephone	7-1288	**Telephone**	777-1288
Alternate		**Estimated Cost**	$ 0.00
Telephone		**Billing**	FIXED PRICE
Non-Available Time		53100-W662-57120	(THOMSON WINDOW ROOF AND INTERIOR RENOVA)

Task List
WILL BE REPLACING ROOF AND WINDOWS THROUGHOUT BUILDING.

DATE WORK STARTED	**CAUSE**
DATE WORK COMPLETED	**CONDITION**
EQUIPMENT	
CLOSING REMARKS	

BENCHSTOCK MATERIALS

Qty	Description	Price Per Unit

Supervisor's Approval _____

Note Date	Title
16-APR-14	**HAZMAT SURVEY RESULTS**

SURVEY DATE: 4/9/14

INSPECTOR #: DARRYL WASHINGTON II BI-00568

STATUS: THE FOLLOWING MATERIALS HAVE BEEN TESTED FOR ASBESTOS CONTAINING MATERIALS RESULTS FOLLOWS

(HIGH ROOF)

ROOFING MATERIAL- POSITIVE FOR ASBESTOS CONTAINING MATERIALS

TAR- POSITIVE FOR ASBESTOS CONTAINING MATERIALS

(LOADING DOCK ROOF)

ASPHALT ROOFING MATERIAL- POSITIVE FOR ASBESTOS CONTAINING MATERIALS

GREY CAULKING- POSITIVE FOR ASBESTOS CONTAINING MATERIALS

ROOF PATCH- POSITIVE FOR ASBESTOS CONTAINING MATERIALS

FLASHING- POSITIVE FOR ASBESTOS CONTAINING MATERIALS

BASE PLYS- POSITVE FOR ASBESTOS CONTAINING MATERIALS

WHITE CAULK- POSITIVE FOR ASBESTOS CONTAINING MATERIALS

ROOFING MATERIAL- NEGATIVE FOR ASBESTOS CONTAINING MATERIALS

(BUILDING EXTERIOR)

DARK GREY WINDOW CAULK- POSITIVE FOR ASBESTOS CONTAINING MATERIALS

OLD WHITE EXPANSION CAULK- NEGATIVE FOR ASBESTOS CONTAINING MATERIAL- NEGATIVE FOR ASBESTOS CONTAINING MATERIALS

TEXTURE - NEGATIVE FOR ASBESTOS CONTAINING MATERIALS

NEW WHITE EXPANSION CAULK- NEGATIVE FOR ASBESTOS CONTAINING MATERIALS

CAULK (BACK GLASS DOOR OF BLD)- NEGATIVE FOR ASBESTOS CONTAINING MATERIALS

(MAIN ROOF)

ROOFING MATERIAL- NEGATIVE FOR ASBESTOS CONTAINING MATERIAL

DARK GREY EXPANSION CAULK- NEGATIVE FOR ASBESTOS CONTAINING MATERIAL

LIGHT GREY EXPANSION CAULK- NEGATIVE FOR ASBESTOS CONTAINING MATERIAL

BLACK CAULK- NEGATIVE FOR ASBESTOS CONTAINING MATERIAL

TAR - NEGATIVE FOR ASBESTOS CONTAINING MATERIAL

GRAY BEAM PAINT (MAIN ROOF)- NEGATIVE FOR LEAD

WHITE EXTERIOR PAINT- NEGATIVE FOR LEAD

INSPECTORS NOTES:

PLEASE CONTACT BRIAN WOOD FOR LOCATION AND DETAIL INFORMATION FOR THIS ROOFING PROJECT.

IF YOU ENCOUNTER ANY SUSPECT MATERIALS IN PLACE AND DEEM IT SUSPECT FOR ASBESTOS AND OR LEAD AND IT IS NOT LISTED ABOVE PLEASE STOP WORK AND CALL THE ASBESTOS PROGRAM MANAGER FOR FURTHER TESTING OR ABATEMENT

REFER TO THE SURVEY RESULTS DOCUMENT ATTACHED TO THE WO FOR DETAILED INFORMATION.

08-APR-04 ASBESTOS MAY BE PRESENT IN THIS BUILDING

WARNING - ASBESTOS EXPOSURE ALERT - EXPOSURE TO ASBESTOS MAY BE HARMFUL TO YOUR HEALTH.

AS OF 4/1/2004 THE FOLLOWING AREAS WITHIN THE BUILDING HAVE BEEN IDENTIFIED BY SURVEY TO CONTAIN ASBESTOS:

BLDG 111 STUDENT HEALTH
MECH ROOM 106 --> ABATED
MECHANICAL RM FIRST FLOOR & HVAC ROOMS --> HOT WATER PIPE [160 LIN. FT.]
MECHANICAL RMS --> HOT WATER PIPE [30 LIN. FT.]

PLEASE NOTE - IDENTIFICATION OF ASBESTOS CONTAINING COMPONENTS WITHIN THIS STRUCTURE DOES NOT SPECIFICALLY EXCLUDE THE PRESENCE OF ASBESTOS WITHIN OTHER AREAS.

THE FOLLOWING COMMON TYPES OF BUILDING COMPONENTS COULD CONTAIN MATERIALS THAT, WHEN DISTURBED, MIGHT EXPOSE YOU TO ASBESTOS:

1. FLOOR TILE
2. PIPE INSULATION
3. BLACK MASTIC
4. HVAC DUCT MASTIC
5. SPRAYED-ON FIREPROOFING
6. SPRAYED-ON CEILINGS
7. SHEETROCK JOINT COMPOUND

BEFORE DISTURBING THESE TYPES OF COMPONENTS, CONFIRM THAT THEY DO NOT CONTAIN ASBESTOS AND TAKE PROPER PRECAUTIONS AT ALL TIMES.

25-OCT-13 ASBESTOS IN JOINT COMPOUND

ASBESTOS CONTAINING JOINT COMPOUND HAS BEEN FOUND IN THIS BUILDING. DO NOT CUT, SAND OR DRILL WALLS. FOR FURTHER INFORMATION OR ASSISTANCE, PLEASE CONTACT THE USC HAZMAT PROGRAM.

12-AUG-10 2009-11-10 BLDG COMPONENT ASBESTOS/LEAD EXPOSURE UPDATE

BELOW ARE THE ASBESTOS AND LEAD TESTING RESULTS FOR THE THOMPSON STUDENT HEALTH CENTER:
SHEET ROCK: NEGATIVE FOR ASBESTOS CONTAINING MATERIALS
JOINT COMPOUND: POSITIVE FOR ASBESTOS CONTAINING MATERIALS
NO PAINT TESTED DUE TO THE WALLS HAVING WALL PAPER ON WALLS
2X2 CEILING TILE: NEGATIVE FOR ASBESTOS CONTAINING MATERIALS
THIS BUILDING HAS BLACK MASTIC ON WATER LINES AND BEHIND FLOORING THAT CONTAINS ASBESTOS CONTAINING MATERIALS
THE FLOOR TILE IN THIS BUILDING CONTAINS ASBESTOS
SHEET FLOORING IN VARIOUS COLOR PATTERNS ARE POSITIVE FOR ASBESTOS
PIPE INSULATION IN MECHANICAL ROOMS AND BETWEEN WALLS MAY OR MAY NOT CONTAIN ASBESTOS
THE 1X1 TILES ABOVE THE 2X2 SECTIONS ARE NEGATIVE FOR ASBESTOS
DO NOT DRILL INTO THE COLUMNS IN THIS BUILDING DUE TO THE JOINT COMPOUND BEING TRIALED ON EACH SECTION

IF YOU AND/ OR CONTRACTORS NEED TO DISTURB ANY MATERIALS YOU DEEM SUSPECT THAT ARE NOT LISTED ABOVE, STOP WORK AND CONTACT THE ASBESTOS PROGRAM MANAGER, 777-1208. IF YOU NEED TO DISTURB ANY MATERIAL LISTED AS POSITIVE, YOU MUST CONTACT THE ASBESTOS PROGRAM MANAGER TO ARRANGE FOR REMOVAL. THIS INFORMATION MUST BE PASSED ALONG TO ALL CONTRACTORS, SUB-CONTRACTORS, AND INDIVIDUALS WORKING IN THIS BUILDING

SECTION 00 62 33

ROOF MANUFACTURER'S ACKNOWLEDGMENT

Owner: University of South Carolina

Project Name: Thomson Student Health Center Roof and Wall Renovations

Project Address: 1409 Devine St. Columbia, SC 29208

Roofing Contractor: _____

Address: _____

Telephone:_____

Facsimile: _____

This is to advise the Owner that having thoroughly reviewed the Specifications and Drawings contained within the Project Manual dated May 22, 2014 for the above-titled project, we acknowledge that the roof system(s) and flashing system(s) specified are suitable for use on this project. Having reviewed the project requirements in detail, the Manufacturer will provide a written response to the Engineer seven days prior to the bid date, if conflicts between the Manufacturer's requirements occur with the above listed documents.

1. The manufacturer further agrees to delete all exceptions relative to system failure from wind uplift pressures below the wind uplift pressures listed in the specifications due to wind speeds up to and including 72 mph.
2. The manufacturer certifies that the installer is approved, authorized, or licensed by manufacturer to install specified roof system and is eligible to receive the specified manufacturer's warranty.
3. The manufacturer will comply with the specified requirements for on-site technical support.

_____ is hereby designated as our Liaison on this project.
(Print or type name of Liaison)

_____ _____
Telephone Facsimile

_____
Roof Manufacturer's Company Name

_____ _____
Roof Manufacturer Representative's Signature Date

_____ _____
Roof Manufacturer Representative's Name Title

_____
Roof Manufacturer's Address

_____ _____
Telephone Facsimile

END OF SECTION 00 62 33

SECTION 00 65 36

ROOF SYSTEM INSTALLER'S TWO-YEAR WARRANTY

Know all men by these presents, that we, (Contractor) _____ , having installed roofing system, flashings and sheet metal on the Thomson Student Health Center Roof and Wall Renovations under contract between University of South Carolina (Owner) and Contractor, warrant to the Owner with respect to said work that for a period of two (2) years from date of substantial completion**,** the work shall be absolutely watertight and free from any and all leaks, provided however the following are excluded from this Warranty:

a. Defects or failures resulting from abuse by the Owner.
b. Defect in design involving failure of (1) structural frame, (2) load bearing walls, and (3) foundations.
c. Damages caused by fire, tornado, hail, hurricane, acts of God, wars, vandalism, riots or civil commotion.

We, Contractor, agree that should any leaks occur in the work we will perform emergency repairs within 24 hours notice and perform permanent repairs within a reasonable time in a manner to restore the work to a watertight condition by methods compatible to the system and acceptable under industry standards and general practice, all at no expense to the Owner.

We, Contractor, further agree that for a period of two (2) years from date of substantial completion referred to above, we will make repairs at no expense to the Owner to any defects which may develop in the work including but not limited to delaminating of membrane, delaminating of insulation facer, voids, dry laps, blisters, wrinkles, fish-mouths, ridges, splits and loose flashing in a manner compatible to the system and acceptable under industry standards and general practice as established by the Engineer.

Signature: _____ Title: _____

_____ State
_____ County

I, _____, a Notary Public for _____ County, _____, do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal, this _____ day of_____, 20_____.

_____ (OFFICIAL SEAL)
Notary Public

My commission expires_____, 20____.

INSTALLER'S TWO-YEAR WARRANTY

Know all men by these presents, that we, (Contractor) _____ , having installed _____ on the Thomson Student Health Center Roof and Wall Renovations under contract between University of South Carolina (Owner) and Contractor, warrant to the Owner with respect to said work that for a period of two (2) years from date of substantial completion**,** we will make repairs at no expense to the Owner to any defects which may develop in the work in a manner compatible to the system and acceptable under industry standards and general practice as established by the Engineer, provided however the following are excluded from this Warranty:

a. Defects or failures resulting from abuse by the Owner.
b. Defect in design involving failure of (1) structural frame, (2) load bearing walls, and (3) foundations.
c. Damages caused by fire, tornado, hail, hurricane, acts of God, wars, vandalism, riots or civil commotion.

Signature: _____ Title: _____

_____ State
_____ County

I, _____, a Notary Public for _____ County, _____, do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal, this _____ day of_____, 20_____.

_____ (OFFICIAL SEAL)
Notary Public

My commission expires_____, 20____.

END OF SECTION 00 65 36

SECTION 00 65 37

ASBESTOS FREE WARRANTY

Owner: University of South Carolina
Project Name: Thomson Student Health Center Roof and Wall Renovations
Project Address: 1409 Devine St. Columbia, SC 29208
Project Manual Date: May 22, 2014

Date of Substantial Completion: _____

Know all men by these present that we, _____
(Contractor, Subcontractor, Material Supplier or Equipment Manufacturer)

having furnished labor, materials, equipment and/or supplies; removed existing roof system; installed new roof system and/or miscellaneous roof system components; from, to and/or on the above referenced Project under contract between the Owner and Contractor, warrant to Owner with respect to said work that no materials containing asbestos fibers were incorporated into the work, and that, to our knowledge and belief, no materials containing asbestos remain in or are covered by the work.

Exceptions: _____
If there are no exceptions, state "No Exceptions" here.

Signature: _____

Title: _____

_____ State
_____ County

I, _____, a Notary Public for _____ County, _____, do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal, this _____ day of_____, 20_____.

_____ (OFFICIAL SEAL)
Notary Public

My commission expires_____, 20___.

END OF SECTION 00 65 37

USC SUPPLEMENTAL GENERAL CONDITIONS

FOR CONSTRUCTION PROJECTS

Revised 6/23/13

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, if permitted, to the work area. Providing safe, accessible, plywood pedestrian ways around construction may be required if a suitable alternative route is not available.

2. Fraternization between contractor's employees and USC students, faculty or staff is strictly prohibited- zero tolerance!

3. USC will not tolerate yelling, rude, abusive or degrading behavior on the job site. Heckling, cat-calling, and behavior which may be perceived as harassment 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, and subject to the permanent removal of the contractor's employee(s) from the jobsite for the duration of the project.

4. Contractor's employees must adhere to the University's policy of maintaining a drug-free and tobacco free workplace.

5. Contractor must sign a Contractor Key Receipt/Return form before any keys are issued. Keys must be returned immediately upon the completion of the work. The contractor will bear the cost of any re-keying necessary due to the loss of, or failure to return keys.

6. A welding permit must be issued by the University Fire Marshall before any welding can begin inside a building. Project Manager will coordinate.

7. Contractor must notify the University immediately upon the discovery of suspect materials such as those potentially containing asbestos (ACM) or other such hazardous materials. These materials MUST NOT be disturbed until handling is approved by the USC project manager.

8. **Contractor shall follow all regulations pertaining to OSHA, EPA and SCDHEC. Removal of asbestos containing material (ACM) must be performed by a certified abatement company that has, at a minimum, one certified asbestos supervisor and certified asbestos worker(s) as needed, through SCDHEC.**

9. At the beginning of the project, the USC project manager will establish the contractor's staging and laydown area(s). These areas will also be used for the contractor's work vehicles. Absolutely 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 should not be brought to campus. Parking permits, which are required for all contractor's work vehicles, must be obtained through USC's project manager. The laydown area will be clearly identified to the contractor by the project manager, with a sketch, drawing, or picture provided to Parking Services. In turn, the contractor will mark off this area with a metal sign containing the project name, USC's project manager's name and cell phone number, contractor name and cell phone number, and a date shown which is the anticipated end date of the project. Sign to be affixed to construction fencing. Sign dimensions shall be at least 2' x 3'. Where this area is subject to foot traffic, protective barriers will be provided by the contractor as specified by the project manager. The area will be maintained in a neat and orderly fashion. Contractor work vehicles parked in the laydown/staging area, or other designated parking areas will be clearly marked and display a USC furnished placard/hangtag for identification.

10. Contractor will be responsible for providing its own temporary toilet facilities.

11. Use of USC's communication facilities (telephones, copiers, computers, faxes, etc.) by the contractor is prohibited.

12. Contractor will not have any interior access to buildings on campus.

13. Contractor must provide its own electrical power supply. Water may be available to the extent of existing sources. Any needed or desired taps, connections, or metering devices, shall be the sole expense of the contractor.

14. For all projects over $100,000, including IDC contracts, an SE-395, Contractor Performance Evaluation, will be completed by USC's project manager and reviewed with the contractor at the beginning of the project and a copy given to the contractor. At the end of the project the form will be completed and a construction performance rating will be established.

15. 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 weekly, or when the dumpster is full, whichever occurs first. Construction waste will 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 AN ORDERLY, 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 REQUIREMENTAN AMOUNT OF UP TO $1,000 PER VIOLATION.

16. 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.

17. Tree protection fencing is required to protect existing trees and other landscape features to be preserved, within a construction site. The limits of this fencing will be evaluated for each situation with the contractor, USC arborist, and USC project manager. The tree protection fence shall be 5' tall chain link fence unless otherwise approved by USC project manager. No entry or materials will be allowed inside tree protection zone. A 4" layer of mulch shall be placed over the tree protection area to maintain moisture in the root zone.

18. Where it is necessary to cross walks, tree root zones (i. e. under canopy) or lawns the following measures shall be taken: For single loads up to 9,000 lbs., a ¾" minimum plywood base shall be placed over impacted areas. For single loads over 9,000 lbs., two layers of ¾" plywood is required.

19. 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 matting structurally functional.

20. Any damage to existing landscaping (including lawn areas) will be remediated before final payment is made.

21. Where it is necessary to jump curbs, dimensional lumber and plywood must be built up to appropriate curb elevation to protect curbs from damage. Contractor will be responsible for any project related damage.

22. Construction area fencing consisting of temporary 5' tall chain link fencing faced with green fabric is required around the entire construction/laydown/staging area.

DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 11 00

SUMMARY OF WORK

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Name: Thomson Student Health Center Roof and Wall Renovations

B. Project Address: 1409 Devine St. Columbia, SC 29208

C. Owner: University of South Carolina

D. Engineer: The Contract Documents, dated May 22, 2014, were prepared by REI Engineers.

E. This work includes the provision of all labor, material, equipment, supervision and administration to integrate the work outlined in this project manual into the total building system such that no leakage into the system occurs. In general, the scope of work in the **Base Bid** will include:

1. Sector A (Approximately 6,900 square feet): Remove and dispose of the existing roof system including flashings and sheet metal down to the existing lightweight concrete; repair damaged or deteriorated lightweight concrete; mechanically attach new base sheet; adhere base layer insulation in foam adhesive; adhere gypsum overlayment in foam adhesive; adhere a new two-ply modified bitumen roof membrane including a heat applied base ply and heat or cold applied surface ply and provide new sheet metal flashings and accessories to provide a complete, watertight, 20-year warrantable roof assembly.
2. Sector B (Approximately 3,138 square feet): Remove and dispose of the existing roof system including flashings and sheet metal down to the existing lightweight concrete; repair damaged or deteriorated lightweight concrete; mechanically attach new base sheet; adhere base layer insulation in foam adhesive; adhere coverboard insulation in foam adhesive; adhere a new two-ply modified bitumen roof membrane including a heat applied base ply and heat or cold applied surface ply and provide new sheet metal flashings and accessories to provide a complete, watertight, 20-year warrantable roof assembly.
3. Sector C (Approximately 240 square feet): Remove and dispose of the existing roof system including flashings and sheet metal down to the existing lightweight insulating concrete; repair damaged or deteriorated lightweight insulating concrete; mechanically attach new base sheet; adhere base layer insulation in foam adhesive; adhere coverboard insulation in foam adhesive; adhere a new two-ply modified bitumen roof membrane including a heat applied base ply and heat or cold applied surface ply and provide new sheet metal flashings and accessories to provide a complete, watertight, 20-year warrantable roof assembly.
4. Sector D (Approximately 844 square feet): Remove and dispose of the existing roof system including flashings and sheet metal down to the existing lightweight concrete; repair damaged or deteriorated lightweight concrete; mechanically

attach new base sheet; adhere base layer insulation in foam adhesive; adhere coverboard insulation in foam adhesive; adhere a new two-ply modified bitumen roof membrane including a heat applied base ply and heat or cold applied surface ply and provide new sheet metal flashings and accessories to provide a complete, watertight, 20-year warrantable roof assembly.

5. Sector E (Approximately 190 square feet): Remove and dispose of the existing roof system including flashings and sheet metal down to the existing lightweight concrete; repair damaged or deteriorated lightweight concrete; mechanically attach new base sheet; resecure the existing edge nailers to remain in place; adhere base layer insulation in foam adhesive; adhere gypsum overlayment in foam adhesive; adhere a new two-ply modified bitumen roof membrane including a heat applied base ply and heat or cold applied surface ply and provide new sheet metal flashings and accessories to provide a complete, watertight, 20-year warrantable roof assembly.
6. Sector F (Approximately 200 square feet): Remove and dispose of the existing roof system including flashings and sheet metal down to the existing structural deck; repair damaged or deteriorated structural decking; mechanically attach base layer and second layer insulation; mechanically attach gypsum overlayment; adhere a new two-ply modified bitumen roof membrane including a heat applied base ply and heat or cold applied surface ply and provide new sheet metal flashings and accessories to provide a complete, watertight, 20-year warrantable roof assembly.
7. Sector G (Approximately 155 square feet): Remove and dispose of the existing roof system including flashings and sheet metal down to the existing structural deck; repair damaged or deteriorated structural decking; mechanically attach new base sheet; resecure the existing edge nailers to remain in place; adhere base layer insulation in foam adhesive; adhere second layer insulation in foam adhesive; adhere gypsum overlayment in foam adhesive; adhere a new two-ply modified bitumen roof membrane including a heat applied base ply and heat or cold applied surface ply and provide new sheet metal flashings and accessories to provide a complete, watertight, 20-year warrantable roof assembly.
8. Remove the existing lightning protection/grounding system prior to commencement of roof replacement work. Upon completion of flashing and sheet metal installation, reinstall existing lightning protection/grounding system and upgrade as required to meet the current requirements of all applicable organizations and building codes including but not limited to Building Standards and Underwriters Laboratories.
9. Exterior Wall Repairs: Remove and replace all exterior wall control joint sealant, remove and replace window and storefront wet seals, grind out spalling mortar joints at brick ties and repoint, grind back shelf angles at spalling mortar and repoint, install copper cover plates at copper ledge, repoint existing deteriorated mortar joints, stucco repairs, seal various wall penetrations, prepare and paint lintels, concrete coping repairs, install clear water repellant at top of brick parapet on East end of building, and cleaning of building exterior.
10. Remove and store offsite for reinstallation existing electric bird relocation system. Upgrade existing components as required to meet the current installation requirements of Avian Flyaway, Inc.

F. Asbestos Containing Roofing Materials (ACRM):

1. The presence of Asbestos Containing Roofing Materials (ACRM) has been detected in test samples identified in Section 00 31 23. The Contractor shall remove and dispose of all ACRM in a safe and legal manner.
2. Contractor responsibilities include the following:

a. The contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and local regulations pertaining to work practices, transporting, disposal, and protection of workers, visitors, to the site, and persons occupying areas adjacent to the site. Matter of interpretation of standards shall be submitted to the appropriate administrative agency for resolution before starting work.

3. Submittals required:

a. Training

i. The contractor shall submit copies of supervisor(s) and workers certificated from an DHEC approved course for each employee who will disturb asbestos as evidence that each asbestos employee is accredited as required by USC.

b. Asbestos Abatement Work Plan

i. The contractor shall submit a detailed written work plan outlining the asbestos abatement sequencing, method(s) of removal, work areas, etc. must be accepted in writing by the owner prior to start of any asbestos work.

c. Asbestos Waste Shipment

i. The contractor shall submit the asbestos waste manifest within five days of the final waste disposal if not previously submitted.

4. It is the intention of these specifications that no asbestos bearing materials be incorporated into the work. In the event the contractor should determine unanticipated asbestos bearing materials to be present in the existing building components, Contractor is to stop all work in the affected area, notify the Engineer and Owner, and provide temporary protection as required. Costs incurred, if any, due to the presence of hidden and/or unanticipated asbestos bearing materials will be authorized by Change Order to this contract.

G. The contractor is responsible for all electrical, plumbing, mechanical, and other related trade work necessary to facilitate project operations. Contractor is responsible for re-locating any and all conduit, HVAC equipment, curbs, and/or plumbing necessary to comply with the requirements of these documents. All work shall conform to the requirements of the current Building Code approved in the State of the project location.

H. General requirements and specific recommendations of the material manufacturers are included as part of these specifications. The manufacturers' specifications are the minimum standards required for the completed systems. Specific items listed herein may improve the standards required by the manufacturers and will take precedence where their compliance will not affect the manufacturers' guarantee or warranty provisions.

1.03 CONTRACT

A. Project will be constructed under a single prime general construction contract.

1.04 SITE INVESTIGATION

A. The Contractor acknowledges that he has satisfied himself as to the nature and location of the Work, the general and local conditions, particularly those bearing upon transportation,

disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, ground water table or similar physical conditions at the site, the conformation and condition of the ground, the character, quality and quantity of surface and subsurface materials to be encountered, the character of equipment and facilities needed prior to and during the prosecution of the Work and all other matters which can in any way affect the Work or the cost thereof under this Contract. Any failure by the Contractor to acquaint himself with all the available information concerning these conditions will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. Field measurements shall be taken at the site by the Contractor to verify all data and conditions affected by the Work.

1.05 HOT WORK OPERATIONS

A. Hot work includes, but is not limited to open flames and spark producing operations, welding, cutting, grinding, torches, etc.

B. The Contractor shall be responsible for all hot work and hot work monitoring. The Contractor shall be responsible for coordinating hot work with Owner.

C. The Contractor shall be responsible for the hot work operations of their subcontractors, and shall monitor hot work operations conducted by their subcontractors.

D. Work Area:

1. The Contractor shall inspect conditions listed on the Hot Work Permit.
2. The Contractor shall be responsible for inspecting the work area prior to beginning work. The Contractor shall notify the Owner of unsatisfactory conditions, and ensure conditions are satisfactory to proceed with work.
3. Where torch application is specified, and fire safe conditions cannot be assured by the Contractor, the Contractor shall notify the Owner, the Engineer and Manufacturer immediately to develop alternate methods of material application to ensure fire prevention. Operations shall not proceed when unsafe conditions are found.
4. The Contractor shall seal all building openings to prevent flames or burning debris from entering concealed spaces and building interior. All openings, roof deck joints, curbs, ducts, etc. shall be stripped or otherwise sealed and protected. Wood materials shall be protected as required to eliminate direct flame exposure from torch. Alternate methods of application are encouraged where fire prevention measures cannot be fully assured by the Contractor.
5. The Contractor shall disconnect air handling equipment in the hot work area as required to prevent smoke and flames from being pulled into the building and equipment. This shall be coordinated 48 hours in advance with the Owner before disconnecting equipment.
6. The Contractor shall remove all other combustibles from the hot work area. Remove all solvents, roofing adhesives, roofing cement, and all other flammable liquids from the hot work area.

E. Fire Watch:

1. The Contractor shall provide fire watch personnel to closely monitor and inspect the work area and adjacent areas for fires, smoldering materials, hot surfaces and smoke.
2. The Contractor shall inspect and monitor the area between the roof deck and ceiling during and after hot work.
3. The Contractor shall monitor conditions for the period of time specified by the Hot Work Permit, and as conditions dictate. The work area and adjacent areas shall be

monitored no less than one hour after hot work has ceased. The time period shall be recorded by the Contractor.

4. The Contractor shall provide designated fire watch personnel to monitor interior conditions and exterior conditions during, and after, hot work operations.
5. The Contractor shall be responsible for properly training and instructing fire watch personnel of their responsibilities and duties.
6. Fire watch shall meet the Owner's requirements.
7. Contractor shall monitor the work area and building interior, and coordinate monitoring process with the Engineer and Owner 48 hours in advance of hot work. Contractor shall ensure proper hot work procedures are maintained in all curbs, ducts, concealed spaces and building interior.

F. Fire Prevention and Fire Safety:

1. Fire prevention and fire safety shall be the Contractor's responsibility. Contractor shall be responsible for developing a pre-fire emergency plan, coordinated with the Engineer and Owner to plan for fire emergencies.
2. It is the responsibility of the Contractor to enforce fire safety precautions and to ensure safety measures are followed at all times by the Contractor's and Subcontractor's personnel.
3. Contractor shall be responsible for maintaining sufficient fire suppression equipment, including fire extinguishers and a charged water hose.

1.06 WORK UNDER OTHER CONTRACTS

A. Separate Contract: Owner may award a separate contract for performance of certain construction operations at Project site.

B. Contractor shall cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying Work under this Contract.

1.07 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI/CSC's "MasterFormat" numbering system.

1. Section Identification: The Specifications use section numbers and titles to cross-reference Contract Documents. Sections in the Project Manual are in numeric sequence.; however, the sequence is incomplete. Consult the Table of Contents at the beginning of the Project Manual.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 11 00

SECTION 01 14 00

WORK RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements for work sequence, work restrictions, occupancy requirements and use of premises.

1.02 RELATED DOCUMENTS

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

1.03 WORK SEQUENCE

A. The Work shall be conducted in the following sequences unless construction phases are otherwise specified.

1. Construct Work in phases to accommodate the Owner's use; if applicable, of the premises during the construction period; coordinate the construction schedule and operations with the Owner and Engineer.
2. Complete through wall flashing work at Sectors A and D prior to existing roof system removal at Sectors A and D.
3. Complete Work at South elevation of building, including Final Cleaning, prior to August 11, 2014.
4. Complete exterior wall Work prior to installation of surface ply membrane.
5. Construct Work in phases to provide for public convenience. Do not close off public use of facility until completion of one phase of construction will provide alternative usage.
6. Construction shall be scheduled in such a manner that once work has commenced on one facility, the Contractor's work force shall remain at that facility continuously each work day through final completion at that facility.

1.04 WORK RESTRICTIONS

A. Work hours shall generally be performed during normal business hours. Should the Contractor elect to work outside of normal business hours or if required for shutdown or disconnection of rooftop equipment, notification to the Owner and Engineer at least one week in advance shall be required. No work shall be scheduled without prior notification and authorization.

B. Shutdown and disconnect of rooftop equipment as required for performance of Work shall take place over weekend hours or after occupant work hours.

C. Contractor shall coordinate work schedule with School's testing and special events schedule and may not be allowed to be on-site during certain testing days/events.

1. At the Owner's discretion, no work shall take place September 10, 2014 through September 17, 2014.

1.05 OCCUPANCY REQUIREMENTS

A. Owner Occupancy

1. Owner will occupy the premises during the entire period of construction to conduct his normal operations. Cooperate with Owner in all construction operations to minimize conflict, and to facilitate Owner usage.
2. Contractor shall at all times conduct his operations as to ensure the least inconvenience and the greatest amount of safety and security for the Owner, his staff, and the general public.
3. Control noise from operations so that building occupants are not affected.

1.06 USE OF PREMISES

A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.

1. Limits: Confine constructions operations to areas of work being renovated as approved by Engineer and Owner.

    a. Access, staging and storage locations shall be limited to areas indicated in Contract Drawings.
    b. Performance of Work at North elevation of building shall be limited to access provided from roof Sector A and B. No access from the ground is provided.
    c. Performance of Work at South elevation of building shall be limited to the sidewalk area adjacent to the building. Refer to the Contract Drawings. Devine Street shall not be utilized for access, staging or storage.

2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

    a. Schedule deliveries to minimize use of driveways and entrances.
    b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

3. Move any stored materials and equipment that interfere with operations of the Owner.
4. Roof access ladder and scaffolding shall not be staged overnight. Remove and secure offsite unless otherwise approved by Owner.

B. Use of Existing Building

1. Maintain existing building in a weathertight condition throughout construction period.
2. Take every precaution against injuries to persons or damage to property.
3. Protect building, its contents, and its occupants during construction period.
4. The Contractor shall not overload or permit any part of the structure to be loaded with such weights as will endanger its safety or to cause excessive deflection. Materials placed on the roof prior to installation shall be equally distributed over the roof area.
5. Protect any existing surface improvements, such as pavements, curbs, sidewalks, lawn and landscaped areas, utilities, etc.
6. Repair to the Owner and Engineer's satisfaction, or to restore to a condition equal to that existing at the time of award of Contract, or to make restitution acceptable to the Owner, any and all damages to the building, its contents, or surface improvements resulting from, or attributable to, the work operation.

7. Interior Access

a. Shall be limited to that required for existing roof access door modification, inspection after inclement weather and daily site reporting unless otherwise directed by Owner.
b. Provide an additional set of footwear with clean soles when accessing interior for Work related activities.

C. Transportation Facilities

1. Truck and equipment access:

a. Avoid traffic conflict with vehicles of the Owner's employees and customers, and avoid over-loading of street and driveways elsewhere on the Owner's property, limit the access of trucks and equipment to the designated areas.
b. Provide adequate protection for curbs and sidewalks over which trucks and equipment pass to reach the job site.

2. Contractor's vehicles:

a. Require contractor's vehicles, vehicles belonging to employees of the contractor, and all other vehicles entering the Owner's property in performance of the work the contract, to use only the designated access route.
b. Do not permit such vehicles to park on any street or other area of the Owner's property except in the designated area.

1.07 OWNER POLICIES

A. Tobacco Policy

1. The Owner has adopted a Tobacco Free Policy which applies to all school property. This is a total ban on all tobacco products including cigarettes, cigars, pipes, chewing tobacco, snuff, etc. Contractor is responsible for employee's actions while they are on school property. Failure to follow this policy shall constitute a breach of contract and said contract may be terminated without penalty to the school system.

B. Refer to USC Supplemental General Conditions for Construction Projects and the Indefinite Delivery Contract for additional requirements.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 14 00

SECTION 01 21 00

ALLOWANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements governing allowances.

1.02 RELATED DOCUMENTS

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

1.03 QUANTITY ALLOWANCES

A. Quantity allowance for the items indicated below shall be included in the base bid. The unit price submitted on the Bid Form shall be used to compute the quantity allowances. The quantities indicated are estimated quantities only for the purpose of comparing bids. The Contractor will be compensated at the unit price bid for the exact quantity of work performed under each unit price item. Deductive amounts of unit price work included in the Contract Sum will be calculated at 100% of the quoted add unit price.

1. Allowance No. 1: Include replacing 1,500 Cubic Feet of damaged or deteriorated lightweight concrete fill as specified in Division 7, Section 07 01 50.
2. Allowance No. 2: Include replacing 200 Cubic Feet of damaged or deteriorated structural concrete as specified in Division 7, Section 07 01 50.
3. Allowance No. 3: Include replacing or adding 1,000 Board Feet of wood nailers as specified in Division 6, Section 06 10 00 and not shown on drawings.
4. Allowance No. 4: Include installing 200 Linear Feet of new walkpad material not shown on the Contract Drawings as specified in Division 7, Section 07 54 00.
5. Allowance No. 5: Include replacing 160 Board Feet of wood plank decking as specified in Division 6, Section 06 10 00.
6. Allowance No. 6: Include replacing 100 Square Feet of steel decking as specified in Division 7, Section 07 01 50.
7. Allowance No. 7: Include repairing 745 Square Feet of steel decking with coating as specified in Division 7, Section 07 01 50.
8. Allowance No. 8: Include grinding and tuck pointing 250 Linear feet of spalling mortar at brick ties.
9. Allowance No. 9: Include grinding and tuck pointing 210 Linear feet of spalling mortar at shelf angles.
10. Allowance No. 10: Include tuck pointing 800 Linear feet of cracked or deteriorated mortar joints.

END OF SECTION 01 21 00

SECTION 01 22 00

UNIT PRICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements for unit prices.

1.02 RELATED DOCUMENTS

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

1.03 DEFINITION

A. Unit price is an amount proposed by Bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.04 UNIT PRICE MEASUREMENT

A. Prior to performing any work under a unit price as specified herein, the Contractor shall notify the Engineer to allow for measurement of the actual quantities of work. Any work performed under these items without prior approval and measurement shall be at the Contractor's expense.

B. The Contractor shall maintain a daily log including visual documentation (i.e. digital photographs) showing dates, location and exact quantities of unit price work.

C. Owner and Engineer reserve the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent party.

1.05 UNIT PRICE PAYMENT

A. Unit prices shall include all costs associated with performing the unit price work including but not limited to labor, material, equipment, insurance, applicable taxes, overhead and profit, etc.

1.06 UNIT PRICE PERFORMANCE

A. Unit price work shall be installed in accordance with the applicable specification section(s) and Contract Drawings for the project.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SCHEDULE OF UNIT PRICES

A. Unit prices for the items indicated below shall be provided on the Bid Form.

1. UP-1: Replace Damaged or Deteriorated Lightweight Concrete Fill. Refer to Section 07 01 50.

   a. Unit of Measurement: Cubic Foot (CF)

2. UP-2: Replace Damaged or Deteriorated Structural Concrete. Refer to Section 07 01 50.

   a. Unit of Measurement: Cubic Foot (CF)

3. UP-3: Provide New Wood Blocking. Refer to Section 06 10 00.

   a. Unit of Measurement: Board Foot (BF)

4. UP-4: Provide Additional Manufacturer's Walk Pad Material. Refer to Section 07 54 00.

   a. Unit of Measurement: Linear Foot (LF)

5. UP-5: Replace Damaged or Deteriorated 2-3/4" Thickness Wood Decking. Refer to Section 06 10 00.

   a. Unit of Measurement: Board Foot (BF)

6. UP-6: Replace Damaged or Deteriorated Steel Deck. Refer to Section 05 31 23.

   a. Unit of Measurement: Square Foot (SF)

7. UP-7: Repair Steel Deck with Coating. Refer to Section 07 01 50.

   a. Unit of Measurement: Board Foot (SF)

8. UP-8: Grinding and tuck pointing of spalling mortar at brick ties. Refer to section 04 05 24.

   a. Unit of Measurement: Linear Foot (LF)

9. UP-9: Grinding and tuck pointing of spalling mortar at shelf angles. Refer to section 04 05 24.

   a. Unit of Measurement: Linear Foot (LF)

10. UP-10: Tuck pointing of cracked or deteriorated mortar joints. Refer to section 04 05 24.

    a. Unit of Measurement: Linear Foot (LF)

END OF SECTION 01 22 00

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General project coordination procedures.
2. Coordination.
3. Administrative and supervisory personnel.
4. Project meetings.
5. Weekly Reports

1.02 RELATED DOCUMENTS

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

1.03 COORDINATION

A. Coordinate construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. The Contractor shall coordinate its operations with those included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Contact Progress Reporting: The scheduling and sequence of all operations shall be carefully coordinated with the Owner and Engineer.

C. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.

4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-Construction conference.
7. Pre-installation conferences.
8. Project closeout activities.

1.04 DAILY SITE REPORTING

A. Upon arrival daily, Contractor's lead employee shall report to the facilities office or department where they are working and shall inform the staff that they have arrived, their reasons for being there, and the number of personnel working. "Log/Sign In" as directed by the staff, and show a photo I.D. with company logo.

1.05 PROJECT MEETINGS

A. Pre-Construction Meeting

1. A Pre-Construction Meeting will be scheduled as soon as possible after the award of the contract. The Engineer's Representative will compile minutes of the meeting, and will furnish a copy of the minutes to the Contractor and each person present. The Contractor may make and distribute such other copies as he wishes.
2. Attendance: Contractor Project Manager, Job Superintendent and Job Foreman, Owner, Engineer's Representative, manufacturer's representatives, installers of related work and all other persons concerned with the installation and performance. The Contractor shall also provide three (3) local telephone numbers, which may be used to contact the Contractor or his authorized representative in the event of an emergency after normal business hours.
3. Minimum Agenda: Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers, and the Project Manager; channels and procedures for communication; construction schedule, including sequence of critical work; contract documents, including distribution of required copies of Drawings and revisions; processing of Shop Drawings and other data submitted to the Project Manager for review; rules and regulations governing performance of the work and procedures for safety, first aid, security, quality control, housekeeping and related matters.

B. Progress Meetings

1. The Contractor shall attend monthly progress meetings for the purpose of informing the Owner and the Engineer regarding the status of the project. The Engineer will compile minutes of the meeting, and will furnish a copy of the minutes to the Contractor and each person present. The Contractor may make and distribute such other copies as he wishes.
2. Attendance: Owner, Engineer, Contractor, Job Superintendent, material Supplier, and Subcontractors, as appropriate. Each representative shall be thoroughly familiar with the status of the project and shall be prepared to discuss and act upon any situations, which may arise. The time, date and location of these meetings will be established during pre-construction conference. The Contractor shall provide an updated job progress schedule at each weekly meeting.
3. Minimum Agenda: Review of work progress; field observations, problems, and decisions; identification of problems which impede planned progress; maintenance of progress schedule; corrective measures to regain projected schedules; planned progress during succeeding work period; coordination of projected progress; maintenance of quality and work standards; processing of field decisions

and Change Orders; effect of proposed changes on progress, schedule, and coordination; other business relating to work.

C. Punch List Inspection Meeting

1. Scheduled by Owner and Engineer upon written notification of substantial completion of work from the Contractor.
2. Attendance: Owner, Engineer, Contractor, material manufacturer.
3. Minimum Agenda: Walkover inspection; verification of substantial completion; identification of punch list items; identification of problems, which may impede issuance of warranties.
4. Refer to Section 01 77 00 for other requirements.

D. Final Inspection Meeting

1. Scheduled by Owner and Engineer upon written notification of final completion of work from the Contractor.
2. Attendance: Owner, Engineer, Contractor, material manufacturer.
3. Minimum Agenda: Walkover inspection; verification of final completion including the completion of the punch list items.
4. Refer to Section 01 77 00 for other requirements.

1.06 REPORTS

A. Prepare a weekly construction report recording the following information concerning events at Project site and email a copy to the Project Manager by end of day on the following Monday:

1. Approximate daily count of personnel at Project Site.
2. Daily material deliveries.
3. Daily High and low temperatures and general weather conditions.
4. Accidents.
5. Unusual events.
6. Stoppages, delays, shortages, and losses.
7. Orders and requests of authorities having jurisdiction.
8. Change Orders received and implemented.
9. Change Directives received and implemented.
10. Daily Allowance and Unit Cost usage.
11. Updated work schedule.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 31 00

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

1.02 RELATED DOCUMENTS

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

1.03 SUBMITTAL PROCEDURE

A. General: The Contractor is responsible for providing the submittals to the Engineer. Each submittal must be accepted in writing prior to commencement of work. One original hard and electronic copy of the submittals must be submitted to the Engineer for review. The hard copy submittal will then be returned to the Contractor with comments. Final submittals will require written responses to all Construction Document submittal comments. The submittals shall then be submitted in quadruplicate in one complete hard copy package and one complete electronic set. Partial or incomplete Submittals will be returned to the Contractor.

B. Processing Time: Allow time for submittal review, including time for resubmittals, as specified below. Time for review shall commence on Engineer's receipt of submittal.

1. Initial Review: Allow 7 work days for initial review of submittals.
2. Allow 7 work days for processing each resubmittal.
3. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

C. Identification: Submit in a labeled three ring binder with tabs for each identification number. Submit a separate electronic copy with a separate folder for each identification number.

D. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals and provide letter describing in detail any proposed changes, substitutions, or deviations from the project or manufacturer’s specifications. A written explanation of why substitutions should be considered is required and shall be included under the appropriate tab.

E. Transmittal: Package submittals appropriately for transmittal and handling using a transmittal form. Engineer will discard submittals received from sources other than Contractor. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.

F. Use for Construction: Use only final submittals with mark indicating action taken by Engineer in connection with construction.

1.04 SCHEDULE OF SUBMITTALS

A. The following submittal items shall be submitted in a three ring binder with tabs for each submittal item and a separate electronic copy with a separate folder for each identification number to meet the requirements specified herein:

1. Emergency contact list including pager, mobile and home numbers of key Contractor and Subcontractor personnel, and office and mobile numbers of key Owner and REI personnel.
2. Work schedule indicating start date, crew size, production rate, completion date, etc.

    a. Updated work schedule shall be submitted with weekly construction report identified in 01 31 00, 1.06. Identify proposed locations for work a minimum of one week prior to proposed date for work to take place.

3. Sample Application for Payment including Schedule of Values. Immediately after execution and delivery of the Contract, and before the first partial payment is submitted, the Contractor shall submit to the Owner through the Engineer the following:

    a. An Application for Payment on AIA G702.
    b. A schedule of values on AIA G703 Continuation Sheet consisting of a detailed breakdown of the Contract amount showing separate figures for labor and materials. The work listed under the various sections and subsections of the Specifications shall serve as the format for preparation of the following.

4. Copy of Contractor's Certificate of Insurance
5. Copy of Performance and Payment Bonds
6. Copy of Construction Permit if Applicable
7. Copy of all warranties indicated in Section 01 77 00 to meet the requirements of their respective specification section.
8. Letter describing in detail any proposed changes, substitutions, or deviations from the project or manufacturer’s specifications. A written explanation of why substitutions should be considered is required.
9. Shop drawings or letter stating that the contractor will install materials as detailed in the Contract Drawings unless properly authorized by the Engineer.
10. Asbestos Containing Roofing Materials (Section 01 11 00)
11. Quality Requirements (Section 01 40 00)
12. Mortar, Grout and Polymer Modified Concrete (Section 04 05 14)
13. Masonry Tuck Pointing (Section 04 05 24)
14. Unit Masonry (Section 04 20 00)
15. Rough Carpentry (Section 06 10 00)
16. Preparation for Reroofing (Section 07 01 50)
17. Fluid Applied Water Repellent (Section 07 19 00)
18. Roof Insulation (Section 07 22 16)
19. Modified Bitumen Roofing (Section 07 52 16)
20. Sheet Metal Flashing and Trim (Section 07 62 00)
21. Through Wall Flashing (Section 07 65 00)
22. Roof Accessories (Section 07 72 00)
23. Elastomeric Joint Sealants (Section 07 92 00)
24. Elastomeric Coating Restoration (Section 09 01 90)
25. Exterior Paint (Section 09 91 13)
26. Elastomeric Concrete and Masonry Coating (Section 09 97 23)
27. Facility Lightning Protection (Section 26 41 00)

28. Existing damaged/dysfunctional components documentation (videotape, photos, etc.) including but not limited to; asphalt spills, windows, walls, sidewalks, paving, ceilings, etc. Lack of submission prior to commencement of work indicates Contractor has discovered no existing damaged components and takes responsibility for any damages caused by operations.
29. Complete list of materials with Material Safety Data Sheets (MSDS)

PART 2 PRODUCTS

2.01 SUBMITTALS

A. General: Prepare and submit Submittals required herein and by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's written recommendations.
    b. Manufacturer's product specifications.
    c. Manufacturer's installation instructions.
    d. Manufacturer's catalog cuts.
    e. Wiring diagrams showing factory-installed wiring.
    f. Printed performance curves.
    g. Operational range diagrams.
    h. Compliance with recognized trade association standards.
    i. Compliance with recognized testing agency standards.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Include the following information, as applicable:

    a. Dimensions.
    b. Identification of products.
    c. Fabrication and installation drawings.
    d. Roughing-in and setting diagrams.
    e. Shopwork manufacturing instructions.
    f. Templates and patterns.
    g. Schedules.
    h. Notation of coordination requirements.
    i. Notation of dimensions established by field measurement.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches.

D. Samples: Prepare physical units of materials or products, including the following:

1. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
2. Submit three sets of Samples. Engineer will retain two Sample sets; remainder will be returned.
3. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Engineer's sample where so indicated. Attach label on unexposed side.
4. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

E. Contractor's Construction Schedule: Comply with requirements in Division 01.

F. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of engineers and owners, and other information specified.

G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

H. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

I. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

J. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

K. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

L. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

M. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of

loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

N. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.

O. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

PART 3 EXECUTION

3.01 CONTRACTOR'S REVIEW

A. Review each submittal, check for compliance with the Contract Documents and note corrections and field dimensions prior to submitting to Engineer.

3.02 ENGINEER'S ACTION

A. Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal item with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. No Exceptions Taken
2. Accepted as noted
3. No Action Required
4. Review/Resubmit
5. Rejected/Resubmit
6. Not Subject to Review
7. Received as Information

B. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 01 33 00

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services may be required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.02 RELATED DOCUMENTS

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

1.03 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.

C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.04 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.

1.05 SUBMITTALS

A. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.06 QUALITY ASSURANCE

A. It is the intent under this contract that workmanship shall be of the best quality consistent with the materials and construction methods specified. The presence or absence of the Owner's or Engineer's representative shall in no way relieve the Contractor of his responsibility to furnish materials and construction in full compliance with the drawings and specifications. The Owner and Engineer shall have the authority to judge the quality and require replacement of unacceptable work or personnel at any time.

B. All contractors shall cooperate in the execution of their work and shall plan their work in such manners as to avoid conflicting schedules or delay of work. If any part of a Contractor's work depends upon the work of another Contractor, defects, which may affect that work, shall be reported to the Engineer in order that prompt inspection may be made and defects corrected. Commencement of work by a Contractor where such condition exists will constitute acceptance of the other Contractor's work as being satisfactory in all respects to receive the work commenced, except defects, which may later develop. Work of all trades under this contract shall be closely coordinated in such a manner as to obtain the best possible workmanship for the entire project. All components of the work shall be installed in accordance with the best practices of the particular trade. The General Contractor is responsible to advise the Owner sufficiently in advance of operations to allow for assignment of personnel.

C. Materials or methods described by words which, when applied, have a well known technical or trade meaning will be held to refer to such recognized standard. Standard specifications or manufacturer's literature, when referenced, shall be of the latest revision or printing unless otherwise stated, and are intended to establish the minimum requirements acceptable.

D. All materials shall be new, all materials and workmanship shall be in every respect in accordance with the best modern practice.

E. When special makes or grades of material which are normally packaged by the supplier or manufacturer are specified or accepted, such materials shall be delivered to the site in original packages or containers with seals unbroken and labels intact and shall not be opened until inspected and approved by the Engineer. Contractor shall notify the Engineer prior to such material's delivery.

F. The Contractor's Foreman or Superintendent to maintain one complete set of the contract documents and approved submittals on the job site.

G. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

1. Acceptable Contractor:

a. Be certified in writing for a minimum of two years by the roofing materials manufacturer to install the primary roofing products.
b. Be recognized in the commercial roofing industry.
c. Have a minimum of five (5) years experience in installing the same or similar materials specified under the same firm name as that submitting the bid. If requested, submit a copy of firm's Articles of Incorporation to verify years in business. Also all crew workers on site are to be experienced and have a working knowledge of the system being installed.
d. Principals of the firm to have a minimum of ten (10) years experience in the estimating, supervision, management and administration of a contracting firm engaged in the application of building envelope involving removal of the existing building envelope systems.
e. Licensed by state work is occurring in for the type and dollar amount of work contemplated by these Contract Documents.
f. Never filed bankruptcy or filed for protection from creditors.
g. At any time during the construction and completion of work covered by these Specifications, if the conduct of any workman of the various crafts be determined unsuitable or a nuisance to the Owner or Engineer, or if the workman be considered incompetent or detrimental to the work, the Contractor shall order such party removed immediately from the grounds with the person not returning at any time during the course of work on the project.
h. During the performance of any work by the Contractor or subcontractors, the Contractor shall provide for the entire length of the project a full time onsite superintendent/representative meeting the following requirements:

    i. For the purpose of these Specifications the designation "superintendent" is hereby defined as the individual present on the job site at all times while work is being performed, and whose primary responsibility is to supervise and direct the performance of the Work.
    ii. The superintendent shall be in attendance at the project site at all times during the progress of the work and his duties as superintendent shall be limited to this project only. The superintendent shall supervise and instruct workmen without engaging in the work process. Should the superintendent be absent temporarily from the project at any time, he shall designate a competent foreman to assume duties. During the superintendent's absence the foreman shall not engage in the work process but shall supervise and instruct only. Likewise, any communications given to the foreman shall be as binding as if given to the Contractor.
    iii. It shall be the superintendent's responsibility to communicate all matters pertaining to the Work with the Owner and/or Engineer. In case of emergency or safety, superintendent shall communicate directly with the Owner and/or Engineer. No decisions regarding changes in the Work will be made without the Owner's knowledge.
    iv. Decision making authority and ability.
    v. Able to demonstrate knowledge of work being installed.
    vi. Fluent in the English language (i.e. reading, writing and speaking).
    vii. In possession of mobile telephone at all times.
    viii. Employed by the Contractor at least six months prior to project commencement.

ix. Owner and Engineer/Engineer approval.

x. No later than ten days prior to the pre-construction conference, Contractor shall provide the Owner, in writing, the names of the proposed project manager, job superintendent, and foreman for approval. If he so determines, the Owner, without giving cause, may request an additional name, or names, be submitted for approval. The Owner will notify the Contractor of his acceptance at least 48 hours prior to the pre-construction conference.

xi. Once approved, the superintendent will not be changed except with the consent of the Owner unless either prove to be unsatisfactory to the Owner or Contractor, or cease to be in the Contractor's employment.

xii. Promotion, transfer, or reorganization within the company will not be an acceptable cause for reassignment of the superintendent.

xiii. The superintendent shall have had a minimum of five (5) years continuous experience as a job superintendent.

H. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

I. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.

J. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

K. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

L. Scaffolding Qualifications:

1. Scaffolding Erector shall be trained as a minimum to meet the requirements of OSHA Training Requirements 1926.454.
2. Scaffolding Inspector: Competent Person performing the training must have had specific training in and be knowledgeable about the structural integrity of scaffolds and the degree of maintenance needed to maintain them. The competent person must also be able to evaluate the effects of occurrences such as a dropped load, or a truck backing into a support leg that could damage a scaffold. In addition, the competent person must be knowledgeable about the requirements of OSHA Standard 1926.451. A competent person must have training or knowledge in these areas in order to identify and correct hazards encountered in scaffold work.

    a. Scaffolds and scaffold components shall be inspected for visible defects by a Scaffolding Inspector before each work shift, and after any occurrence which could affect a scaffold's structural integrity.

1.07 QUALITY CONTROL

A. The authorized representatives and agents of Owner shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records.

B. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.

C. Contractor's Responsibilities:

1. Repair and protection of work and materials are Contractor's responsibility.
2. Should any work or materials not conform with requirements of the Specifications or become damaged during the progress of the work, such work or materials shall be removed and replaced, together with any work disarranged by such alterations, at any time before completion and acceptance of the project. All such work shall be done at the expense of the Contractor.
3. Contractor shall correct deficiencies in the work within 24 hours after reported by the Engineer in writing or verbally. If the deficiencies are not corrected within 24 hours, the Owner or Engineer will stop all other work until the deficiencies are corrected. The Contractor will not be allowed additional time for a work stoppage to correct deficiencies.
4. Contractor will coordinate documents with manufacturer and perform such testing, reporting, and communication incidental to provisions of the warranty procedures.
5. Inclement Weather

    a. In the event of temporary suspension of work as during inclement weather, or whenever the Engineer shall direct, the Contractor will protect carefully its work and materials against damage or injury from weather. If, in the opinion of the Engineer, any work or materials have been damaged or injured by reason of failure of the Contractor to protect its work, such materials shall be removed and replaced at the expense of the Contractor.
    b. During inclement weather and temporary suspension of work, the Contractor shall inspect the facility no later than 9:00 AM each day for leaks and perform temporary repairs if necessary. Inspections shall be made daily during extended periods of inclement weather. Upon arrival at the facility, Superintendent shall immediately inform the Owner of his presence and purpose.
    c. If Contractor does not inspect the facility by 9:00 AM on days of inclement weather and there is one or more leaks attributable to the Work, at 9:15 AM the Owner shall exercise his right to contact an outside contractor to perform temporary repairs as necessary to prevent damage to the building, its contents and to minimize disruption. The Contractor shall reimburse the outside contractor an equitable amount as determined solely by the outside contractor. If the Contractor arrives at the project site

after the outside contractor has been contacted, but before temporary repairs are made, the outside contractor shall be reimbursed the fixed amount of $500.00, each occasion, for mobilization and/or travel expenses.

d. Should inclement weather occur after normal business hours Friday, Saturday, and Sunday or holidays, Contractor shall make arrangements with the Owner to provide access to the building to inspect for leaks. The Owner shall be compensated for providing personnel for the service on an hourly rate basis as determined solely by the Owner.

D. Manufacturer's Field Services: During construction and until substantial completion, manufacturer's representative shall perform quality assurance site visits every other week to ensure materials are being properly installed and as required to obtain the specified warranty.

1. The first site visit shall be performed within the first three (3) days of operations.
2. Coordinate all site visits with Engineer. Submit reports of findings within one week of inspection. Payment applications will be rejected until applicable reports are received.
3. Inspections to be performed by an employee of the selected manufacturer that is assigned full time to their technical services department. Sales personnel will not be acceptable for this function and may result in rejection of the work installed that does not fulfill this requirement.
4. Manufacturer's final inspections shall be performed only with REI personnel in attendance. A minimum of seven days' written notice is required. Any manufacturer's final inspection conducted without REI personnel in attendance will be repeated at no additional cost to the Owner.
5. Any violation of this requirement will result in the removal of that manufacturer for a period of not less than one year from the Engineer's accepted materials list.

E. Special Tests and Inspections: Owner may engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction or the Contract Documents as the responsibility of Owner.

1. Testing agency will notify Engineer and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Engineer with copy to Contractor and to authorities having jurisdiction.
3. Testing agency will submit a final report of special tests and inspections at Final Acceptance, which includes a list of unresolved deficiencies.
4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
5. Testing agency will retest and reinspect corrected work.

F. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel.

Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field-curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.
2. Notify testing agency and Engineer at least 48 hours in advance of time required to perform testing services.
3. Notify testing agency and Engineer at least 72 hours in advance to inspect concrete reinforcing placement prior to pouring concrete or grouting masonry if applicable to this project.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Comply with the Contract Document requirements for Section 01 73 00-Cutting and Patching.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 42 00

REFERENCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements relating to Referenced Standards.

1.02 RELATED DOCUMENTS

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

1.03 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Engineer. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Installer": Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.

J. "Experienced": When used with an entity, "experienced" means having successfully

completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

K. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.04 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

C. Conflicting Requirements: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Engineer for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

	Accessibility Guidelines for Buildings and Facilities Available from Access Board www.access-board.gov
CFR	Code of Federal Regulations Available from Government Printing Office www.access.gpo.gov/nara/cfr
FED-STD	Federal Standard (See FS)
FS	Federal Specification Available from National Institute of Building Sciences www.nibs.org

1.05 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change

and are believed to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association, Inc. (The) www.aluminum.org
ACI	American Concrete Institute/ACI International www.aci-int.org
ACPA	American Concrete Pipe Association www.concrete-pipe.org
AGC	Associated General Contractors of America (The) www.agc.org
AHA	American Hardboard Association www.ahardbd.org
AI	Asphalt Institute www.asphaltinstitute.org
AIA	American Institute of Engineers (The) www.e-engineer.com
AISC	American Institute of Steel Construction www.aisc.org
AISI	American Iron and Steel Institute www.steel.org
AITC	American Institute of Timber Construction www.aitc-glulam.org
ALCA	Associated Landscape Contractors of America www.alca.org
ALSC	American Lumber Standard Committee
ANLA	American Nursery & Landscape Association www.anla.org
ANSI	American National Standards Institute www.ansi.org
APA	APA - The Engineered Wood Association www.apawood.org
APA	Engineerural Precast Association www.archprecast.org
ASCE	American Society of Civil Engineers www.asce.org
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers www.ashrae.org
ASME	ASME International (The American Society of Mechanical Engineers International) www.asme.org
ASTM	American Society for Testing and Materials www.astm.org
AWI	Engineerural Woodwork Institute www.awinet.org
AWPA	American Wood-Preservers' Association www.awpa.com
AWS	American Welding Society www.aws.org
BHMA	Builders Hardware Manufacturers Association www.buildershardware.com
BIA	Brick Industry Association (The) www.bia.org

CCFSS	Center for Cold-Formed Steel Structures www.umr.edu/~ccfss
CDA	Copper Development Association Inc. www.copper.org
CIMA	Cellulose Insulation Manufacturers Association www.cellulose.org
CISCA	Ceilings & Interior Systems Construction Association www.cisca.org
CISPI	Cast Iron Soil Pipe Institute www.cispi.org
CLFMI	Chain Link Fence Manufacturers Institute www.chainlinkinfo.org
CPA	Composite Panel Association (Formerly: National Particleboard Association) www.pbmdf.com
CPPA	Corrugated Polyethylene Pipe Association www.cppa-info.org
CRSI	Concrete Reinforcing Steel Institute www.crsi.org
CSI	Construction Specifications Institute (The) www.csinet.org
DHI	Door and Hardware Institute www.dhi.org
EIMA	EIFS Industry Members Association www.eifsfacts.com
EJMA	Expansion Joint Manufacturers Association, Inc. www.ejma.org
FMG (FM)	FM Global (Formerly: FM - Factory Mutual System) www.fmglobal.com
GA	Gypsum Association www.gypsum.org
GANA	Glass Association of North America (Formerly: FGMA - Flat Glass Marketing Association) www.glasswebsite.com/gana
HPVA	Hardwood Plywood & Veneer Association www.hpva.org
IGCC	Insulating Glass Certification Council www.igcc.org
LGSI	Light Gage Structural Institute www.loseke.com
MBMA	Metal Building Manufacturers Association www.mbma.com
MCA	Metal Construction Association www.metalconstruction.org
MFMA	Metal Framing Manufacturers Association
MIA	Marble Institute of America www.marble-institute.com
NAAMM	National Association of Engineerural Metal Manufacturers www.naamm.org
NAIMA	North American Insulation Manufacturers Association (The) www.naima.org
NCMA	National Concrete Masonry Association

	www.ncma.org
NCPI	National Clay Pipe Institute www.ncpi.org
NECA	National Electrical Contractors Association www.necanet.org
NEMA	National Electrical Manufacturers Association www.nema.org
NETA	InterNational Electrical Testing Association www.netaworld.org
NFPA	National Fire Protection Association www.nfpa.org
NFRC	National Fenestration Rating Council www.nfrc.org
NGA	National Glass Association www.glass.org
NHLA	National Hardwood Lumber Association www.natlhardwood.org
NLGA	National Lumber Grades Authority www.nlga.org
NPA	National Particleboard Association (See CPA)
NRCA	National Roofing Contractors Association www.nrca.net
NRMCA	National Ready Mixed Concrete Association www.nrmca.org
NSA	National Stone Association www.aggregates.org
NTMA	National Terrazzo and Mosaic Association, Inc. www.ntma.com
NWWDA	National Wood Window and Door Association (See WDMA)
PCI	Precast/Prestressed Concrete Institute www.pci.org
PDCA	Painting and Decorating Contractors of America www.pdca.com
PDI	Plumbing & Drainage Institute www.pdionline.org
RCSC	Research Council on Structural Connections www.boltcouncil.org
RMA	Rubber Manufacturers Association www.rma.org
SDI	Steel Deck Institute www.sdi.org
SDI	Steel Door Institute www.steeldoor.org
SGCC	Safety Glazing Certification Council www.sgcc.org
SIGMA	Sealed Insulating Glass Manufacturers Association www.sigmaonline.org/sigma
SJI	Steel Joist Institute www.steeljoist.org

SMACNA	Sheet Metal and Air Conditioning Contractors' National Association www.smacna.org
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division) www.sprayfoam.org
SPI	The Society of the Plastics Industry www.plasticsindustry.org
SPIB	Southern Pine Inspection Bureau (The) www.spib.org
SPRI	SPRI (Single Ply Roofing Institute) www.spri.org
SSINA	Specialty Steel Industry of North America www.ssina.com
SSMA	Steel Stud Manufacturers Association (Formerly: ML/SFA - Metal Lath/Steel Framing Association) www.ssma.com
SSPC	SSPC: The Society for Protective Coatings www.sspc.org
SWI	Steel Window Institute www.steelwindows.com
TCA	Tile Council of America, Inc. www.tileusa.com
TPI	Truss Plate Institute
UL	Underwriters Laboratories Inc. www.ul.com
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and
	Door Association) www.wdma.com
WMMPA	Wood Moulding & Millwork Producers Association www.wmmpa.com
WWPA	Western Wood Products Association www.wwpa.org

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

BOCA	BOCA International, Inc. www.bocai.org
IAPMO	International Association of Plumbing and Mechanical Officials (The) www.iapmo.org
ICBO	International Conference of Building Officials www.icbo.org
ICC	International Code Council (Formerly: CABO - Council of American Building Officials) www.intlcode.org
SBCCI	Southern Building Code Congress International, Inc. www.sbcci.org

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CPSC	Consumer Product Safety Commission www.cpsc.gov
EPA	Environmental Protection Agency www.epa.gov
OSHA	Occupational Safety & Health Administration www.osha.gov

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 42 00

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.

1.02 RELATED DOCUMENTS

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

1.03 USE CHARGES

A. General: Cost or use charges for temporary facilities are not chargeable to Owner or Engineer and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, occupants of testing and inspecting agencies and personnel of authorities having jurisdiction.

1.04 QUALITY ASSURANCE

A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.

1. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.05 PROJECT CONDITIONS

A. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:

1. Keep temporary services and facilities clean and neat.
2. Relocate temporary services and facilities as required by progress of the Work.

B. Parking and Traffic Control: Contractor shall be responsible for obtaining and erecting street/parking lot signage as necessary to divert traffic away from staging areas, etc. Contractor is to coordinate signage requirements with the Owner and Engineer. All associated costs are to be borne by the Contractor. Contractor shall provide area for parking for subcontractors, Engineer and Owner representatives.

PART 2 PRODUCTS

2.01 MATERIALS/EQUIPMENT

A. General: Provide new materials. Undamaged, previously used materials in serviceable

condition may be used if approved by Engineer. Provide materials suitable for use intended.

B. Portable Chain-Link Fencing: Minimum 2-inch 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide non-permanent bases for support. Provide green polyethylene fabric to enclose fencing.

C. Water: Potable.

D. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

E. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

A. Locate facilities at location established by Owner.

B. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work.

C. Provide each facility ready for use to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

A. General: Engage appropriate local utility company to install temporary service if service is not available from Owner. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.

1. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
2. Obtain easements to bring temporary utilities to Project site where Owner's easements cannot be used for that purpose.

B. Water Service: Water for construction purposes will be available from the Owner at no charge. Contractor shall operate exterior hose bibs only with properly fitted handles which shall be removed at the end of each work day. Any damage to hose bibs or hose bib stems shall be repaired by Contractor. Hose bibs shall not be operated with pliers.

C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities. Facilities will be located at sites approved by Owner.

1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar

disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.

2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.
3. Drinking-Water Facilities: Provide bottled-water, drinking-water units.

D. Electrical Power Service: Contractor shall provide portable generators for all electrical power requirements.

E. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.

1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

3.03 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access. Coordinate with Engineer on location.

B. Traffic Controls: Provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and "STOP" signs for entrance onto public roads. Comply with requirements of authorities having jurisdiction.

C. Project Identification and Temporary Signs: Prepare Project identification and other signs as required by Owner. Install signs where indicated to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.

1. Prepare temporary signs to provide directional information to construction personnel and visitors.

D. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Section 01 74 00 Cleaning and Waste Management for progress cleaning requirements.

1. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.

E. Storage and Fabrication Sheds: Provide non combustible sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility services. Sheds may be open shelters or fully enclosed spaces within building or elsewhere on-site.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints

from persons or firms near Project site.

B. Material Storage Enclosure Fence: Install enclosure fence with lockable gates to completely enclose and hide the materials storage, or store as much material in locked trailers as practicable.

C. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights. Provide barricades, warning lines and temporary signage as required by Owner.

D. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
2. Vertical Openings: Close openings of 25 sq. ft. or less with plywood or similar materials.
3. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
4. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.
5. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
6. Protect air-handling equipment.
7. Weatherstrip openings.

E. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

F. Protection of adjacent roof areas:

1. Contractor shall provide protection to adjacent roof systems in the form of 3/4-inch CDX plywood over 1-1/2 inch rigid insulation with warning flags on both sides. All foot and equipment traffic shall be limited to protected walkways.

3.05 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
2. Prevent water-filled piping from freezing. Maintain markers for underground

lines. Protect from damage during excavation operations.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Final Acceptance. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Final Acceptance, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 01 Section "Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This Section includes procedural requirements for cutting and patching.

1.02 RELATED DOCUMENTS

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

1.03 DEFINITIONS

A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.04 QUALITY ASSURANCE

A. Engineer's Approval: Obtain approval of cutting and patching before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

B. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio. Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations sealed by a licensed Engineer in the state of the project showing integration of reinforcement with original structure.

C. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that result in increased maintenance or decreased operational life or safety.

D. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity that results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.

E. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

F. Cutting and Patching Conference: If extensive cutting and patching is required, before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.05 WARRANTY

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

PART 2 PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to minimize interruption of services to occupied areas.

3.03 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and

similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Floors and Walls: Where walls or partitions that are removed extend from one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.
5. Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty and similar materials.

END OF SECTION 01 73 29

SECTION 01 74 00

CLEANING AND WASTE MANAGEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. The Owner has established that this Project shall include proactive measures for waste management participation by all parties to the contract.

1. The purpose of this program is to ensure that during the course of the Project all diligent means are employed to pursue practical and economically feasible waste management and recycling options.
2. Upon award, each subcontractor shall be required to furnish documentation from suppliers or manufacturers regarding waste management and recycling options for those products and procedures furnished.
3. Waste disposal to landfills shall be minimized.

1.02 RELATED DOCUMENTS

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

1.03 DEFINITIONS

A. Waste: Any material that has reached the end of its intended use. Waste includes salvageable, returnable, recyclable and reusable material.

B. Construction waste: Solid wastes including, but not limited to, building materials, packaging materials, debris and trash resulting from construction operations.

C. Salvage: To remove a waste material from the Project site to another site for resale or reuse by others.

D. Hazardous waste: Any material or byproduct of construction that is regulated by the Environmental Protection Agency and that may not be disposed in any landfill or other waste end-source without adherence to applicable laws.

E. Trash: Any product or material unable to be returned, reused, recycled or salvaged.

F. Landfill: Any public or private business involved in the practice of trash disposal.

G. Waste Management Plan: A Project-related plan for the collection, transportation, and disposal of the waste generated at the construction site.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.01 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials in a legal manner.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site:

1. Maintain Project site free of waste materials and debris. Remove waste materials and debris from construction site, daily.
2. Waste and debris shall be transported for disposal from roof areas by way of a lift with containerized enclosure to prevent flying debris. Trash chutes are not acceptable.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Final Acceptance.

G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Final Acceptance.

J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

K. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.02 CONSTRUCTION WASTE MANAGEMENT PLAN

A. If required by Owner, Waste Management Plan shall include the following:

1. Solid Waste Disposal and Diversion document.

    a. Identification of materials recycled.
    b. Identification of materials landfill.
    c. Identification of hazardous wastes and disposal.

2. Locations of sorting and waste storage facilities on Site Plan of project.
3. Final documentation of subcontractor/supplier waste management/recycling data.
4. Final documentation of hazardous waste disposal plan.

B. If required by Owner, Construction Waste Management Plan Implementation:

1. The Contractor shall designate an on-site party (or parties) responsible for instructing workers and overseeing and documenting the Waste Management Plan.
2. The "Summary of Construction Waste/Recycling" shall be completed each month and submitted as part of Application for Payment.

    a. All materials identified in the Summary shall be reported by weight.
    b. Where weight is not applicable, Contractor shall report materials by units applicable to material recipient.
    c. Contractor shall procure receipts or other validation of waste management procedures and include them as part of the submittal.

3. The Contractor shall distribute copies of the "Summary of Construction Waste/Recycling" to the Consultant, Owner and each subcontractor involved in the plan.
4. The Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse and return methods to be used by all parties at appropriate stages of the Work.
5. Separation facilities:

    a. Contractor shall define specific areas to facilitate separation of materials for recycling, salvage, re-use or return.
    b. Recycle and waste bin areas are to be maintained in an orderly manner and clearly marked to avoid contamination of materials.
    c. Do not mix recyclable materials.
    d. Store hazardous wastes in secure areas.

6. Hazardous wastes:

    a. Hazardous wastes shall be separated, stored and disposed of in accordance with local and EPA regulations and additional criteria listed below:

i. Building products manufactured with PVC or containing chlorinated compounds shall not be incinerated.
ii. Disposal of fluorescent tubes to open containers is not permitted.
iii. Unused fertilizers shall not be co-mingled with construction waste.

C. Program profits:

1. All profits from recycling of construction waste shall be granted to the Contractor.

3.03 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Final Acceptance.

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Remove tools, construction equipment, machinery, and surplus material from Project site.
d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
e. Remove debris and surface dust from roofs and walls.
f. Clean transparent materials and glass in windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
g. Remove labels that are not permanent.
h. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
i. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess foreign substances.
j. Replace parts subject to unusual operating conditions.
k. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 74 00

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection Procedures.
2. Project Record Documents.
3. Warranties.

1.02 RELATED DOCUMENTS

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

1.03 SUBSTANTIAL COMPLETION

A. The Contractor shall submit written certification to the Engineer that the Project is substantially complete along with the following:

1. Prepare a list of items to be completed and corrected (Contractor's punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
4. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
5. Advise Owner of changeover in heat and other utilities.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
7. Complete final cleaning requirements, including touchup painting.
8. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Substantial Completion Inspection: On receipt of written substantial completion certification, the Engineer will make a substantial completion inspection within seven days after receipt of certification.

1. Should the Engineer consider the Work not substantially complete, he will immediately notify the Contractor, in writing, stating the reasons. The Contractor shall complete the Work and send a second written notice to the Engineer, certifying the Project is substantially complete, at which time the Engineer will re-inspect the work.
2. Should the Engineer consider the Work substantially complete, he will prepare and issue a Certificate of Substantial Completion (AIA G704) accompanied by the list of items to be completed or corrected (Punch List).
3. A punch list of items will be prepared for correction and completion before the Final Inspection. The Contractor shall complete the punch list items within fif-

teen days of the punch list inspection. If the Contractor fails to complete the punch list within this period, the Owner will have the right to impose liquidated damages in the amount of three hundred ($300.00) dollars for each consecutive day until all of the items are completed.

1.04 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 01.
2. Submit signed copy of Engineer's inspection list of items to be completed or corrected (punch list). The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Final Inspection: The submission of the signed punch list constitutes as written request for final inspection for acceptance. On receipt of request, Engineer along with the Owner's Representative will conduct a final inspection within seven days of receipt of certification.

1. Should the Engineer consider that the Work is finally complete in accordance with requirements of the Contract Documents, he will request the Contractor to make Project Closeout Submittals.
2. Should the Engineer consider that the Work is not finally complete, he will notify the Contractor, in writing, stating the reasons.
3. The Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written notice to the Engineer certifying that the Work is complete, at which time the Engineer will re-inspect the Work.

1.05 PROJECT RECORD DOCUMENTS

A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours.

1. The Contractor shall submit all required record documents and warranties within thirty days of the punch list inspection. If the Contractor fails to properly submit all required items within this period, the Owner will have the right to impose liquidated damages in the amount of three hundred ($300.00) dollars for each consecutive day until all of the items are properly submitted.

B. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.

1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

    a. Give particular attention to information on concealed elements that can-

not be readily identified and recorded later.

b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
3. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
4. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Note related Change Orders and Record Drawings, where applicable.

D. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference. The following items shall be submitted, not limited to:

1. Completed and signed Engineer’s Punch List
2. Copy of Manufacturer’s Final Inspection Report
3. Landfill Charge Tickets
4. Asbestos Disposal Manifests (If Applicable)
5. Facility Lightning Protection Project Record Documents

1.06 WARRANTIES

A. Modified Bitumen Roofing System warranty as outlined in Section 07 52 16.

B. Pre-finished Sheet Metal finish warranty as outlined in Section 07 62 00.

C. Elastomeric Joint Sealants material manufacturer warranty as outline in Section 07 92 00.

D. Elastomeric Coating material manufacturer warranty as outlined in Section 09 97 23.

E. Contractor’s two (2) year warranty on their company letterhead using sample contained in the Project Manual.

1. Contractor will be required to attend a post construction field inspection no earlier than twenty-three (23) months and no later than twenty-four (24) months after the date of Substantial Completion and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

F. Contractor's Asbestos-Free Warranty on their company letterhead using sample contained in the Project Manual.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 77 00

DIVISION 04 MASONRY

SECTION 04 05 14

MORTAR, GROUT AND POLYMER MODIFIED CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Installation of mortar and grout.

B. Installation of polymer modified concrete to repair damaged concrete coping.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Masonry Tuck Pointing	Section 04 05 24
2.	Unit Masonry	Section 04 20 00

1.03 REFERENCES

A. Refer to the following references for specification compliance:

1. SC State Building Code
2. American Society for Testing and Materials – ASTM
    a. C40 – Organic Impurities in Fine Aggregates for Concrete
    b. C91 – Masonry Cement
    c. C109 – Compressive Strength of Hydraulic Cement Mortars
    d. C144 – Aggregate for Masonry Mortar
    e. C150 – Portland Cement
    f. C207 – Hydrated Lime for Masonry Purposes
    g. C270 – Mortar for Unit Masonry
    h. C307 – Tensile Strength of Chemical Resistant Mortar, Grouts, and Monolithic Surfacing
    i. C321 – Bond Strength of Chemical Resistant Mortars
    j. C348 – Flexural Strength of Hydraulic Cement Mortars
    k. C404 – Aggregate for Masonry Grout
    l. C476 – Grout for Masonry
    m. C595 – Blended Hydraulic Cement
    n. C780 – Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
    o. C979 – Pigments for Integrally Colored Concrete
    p. C1019 – Sampling and Testing Grout
    q. C1329 – Mortar Cement
3. International Masonry Institute (IMI)
4. Brick Industry Association (BIA)

1.04 SUBMITTALS:

A. Refer to Section 01 33 00-Submittals.

B. Latest edition of the Manufacturer's current material specifications and installation instructions.

C. Manufacturer's Product Data Sheets for all materials specified certifying that all materials supplied comply with all requirements of the identified ASTM and other industry standards or practices.

D. Samples: Furnish mortar color samples to match existing mortar for approval by Engineer and Owner.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Deliver masonry materials in original sealed containers marked with name of manufacturer and identification of contents.

B. Store masonry materials under waterproof covers on planking clear of ground, and protect damage from handling, dirt, stain, water and wind.

1.06 WARRANTY

A. Installer's Two Year Warranty: Contractor's two year warranty on their company letterhead using sample contained in Section 01 77 00-Closeout Procedures.

1. Contractor will be required to attend a Post-Construction field inspection no earlier than twenty- three months and no later than twenty-four months after the Date of Substantial Completion and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 MATERIALS

A. Portland Cement: ASTM C 150, Type I

B. Hydrated Lime: ASTM C 207 S

C. Masonry Cements: ASTM C 91, Type M, S or N

D. Sand: ASTM C 144

1. Light colored sand for mortar for laying face brick.
2. White plastering sand meeting sieve analysis for mortar joints for pointing and laying of structural facing tile units except that 100 percent passes No. 8 sieve and not more than 5 percent retained on No. 16 sieve.
3. Test sand for color value in accordance with ASTM C40. Sand producing color darker than specified standard is unacceptable.

E. Fine Aggregate: Concrete Sand ASTM C 33

F. Course Aggregate: Washed Size 7, 8, 9m, 11, 78m, CA13 or CA16 ASTM C 33

G. Grout Aggregate: ASTM C404, Size 8

H. Admixtures:

1. No air-entraining admixtures or material containing air-entraining admixtures.
2. No antifreeze compounds shall be added to mortar.
3. No admixtures containing chlorides shall be added to mortar.

I. Water: Clean and potable.

J. Mortar Pigment:

1. ASTM C 979: Pigment shall not exceed ten percent of the weight of Portland cement.
2. Carbon black shall not exceed two percent of the weight of Portland cement.
3. Color of mortar shall match existing.

K. Liquid Acrylic Resin: A formulation of acrylic polymers and modifiers in liquid form designed for use as an additive for mortar to improve physical properties.

L. Blended Hydraulic Cement: ASTM C595, Type IS, IP, I (PM).

M. Mortar Cement: ASTM C1329, Type N, S or M.

2.02 MORTAR AND GROUT MIXES

A. Masonry Mortar: Conform to ASTM C270.

B. Pointing Mortar:

1. Cast Stone or Pre-cast Concrete: Proportion by volume; one part white Portland cement, two parts white sand, and 1/5 part hydrated lime.

C. Grout:

1. Conform to ASTM C476 except as specified.
2. Grout type proportioned by volume as follows:

a. Fine Grout:

i. Portland cement or blended hydraulic cement: one part.
ii. Hydrated lime: 0 to 1/10 part.
iii. Fine aggregate: 2-1/4 to three times sum of volumes of cement and lime used.

b. Coarse Grout:

i. Portland cement or blended hydraulic cement: one part.
ii. Hydrated lime: 0 to 1/10 part.
iii. Fine aggregate: 2-1/4 to three times sum of volumes of cement and lime used.
iv. Coarse aggregate: one to two times sum of volumes of cement and lime used.

c. Sum of volumes of fine and coarse aggregates: Do not exceed four times sum of volumes of cement and lime used.

2.03 POLYMER MODIFED CONCRETE MIX

A. Blend of portland cement, fine and course aggregates, polymers and/or admixtures to produce a mix suitable for horizontal and vertical application.

B. Minimum physical properties required by the Design mix:

1. No greater than 0.05% dry cure shrinkage, when tested in accordance with ASTM C 157.
2. Min. 2000 psi compressive strength after 24 hrs, when tested in accordance with ASTM C 109.

3. Min. 1200 psi bond strength, when tested in accordance with ASTM C 157.

PART 3 EXECUTION

3.01 PROTECTION

A. Protect adjacent Work areas and finish surfaces from damage during mortar, grout and polymer concrete work.

B. Provide temporary protection in areas of Work in progress. Protect occupants from harmful dust, airborne particles and debris.

C. Provide temporary barricades or signage as required by Owner to redirect occupants from areas of Work in progress.

3.02 MORTAR SAMPLING AND TESTING

A. Contractor is required to sample and submit mortar for testing and analysis to determine mortar mix requirements prior to work.

1. Testing shall be performed by a qualified testing firm:

a. Virginia Lime Works
b. Engineer approved testing firm

3.03 MIXING:

A. Mix in a mechanically operated mortar mixer for at least three minutes but not more than five minutes.

B. Measure ingredients by volume. Measure all ingredients using a container with a known capacity.

C. Mix water with dry mortar ingredients in sufficient amount to provide a workable mixture which will adhere to vertical surfaces of masonry units.

D. Mix water with grout dry ingredients in sufficient amount to bring grout mixture to a pouring consistency.

E. Mortar that has stiffened because of loss of water through evaporations:

1. Re-tempered by adding water to restore to proper consistency and workability.
2. Discard mortar that has reached its initial set or has not been used within two hours.

F. Pointing Mortar:

1. Mix dry ingredients with enough water to produce a damp mixture of workable consistency which will retain its shape when formed into a ball.
2. Allow mortar to stand in dampened condition for one to 1-1/2 hours.
3. Add water to bring mortar to a workable consistency prior to application.

3.04 MORTAR USE LOCATION:

A. Use Type S mortar for masonry containing vertical reinforcing bars (non-engineered), masonry below grade, masonry solar screens and setting cast stone.

B. For brick veneer over frame back up walls, use Type N Portland cement-lime mortar or Type S masonry cement or mortar cement mortar.

C. Use Type N mortar for other masonry work.

D. Use Type N mortar for tuck pointing work.

3.05 GROUT USE LOCATIONS:

A. Use fine grout for filling wall cavities and cells of concrete masonry units where the smallest dimension is 2 inches (50 mm) or less.

B. Use either fine grout or coarse grout for filling wall cavities and cells of concrete masonry units where the smallest dimension is greater than 2 inches (50 mm).

C. Do not use grout for filling bond beam or lintel units.

3.06 POLYMER MODIFED CONCRETE USE LOCATION:

A. For use on existing concrete coping to repair chipped out corners.

B. Properly prepare concrete in accordance with manufacturer's instructions and key concrete to ensure proper adhesion.

C. Install in accordance with manufacturer's instructions. Install concrete in multiple lifts to fill chipped out corner.

END OF SECTION 04 05 14

SECTION 04 05 24

MASONRY TUCK POINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tuck pointing of damaged or deteriorated mortar joints.

B. Grinding back and tuck pointing of spalled mortar joints at rusted brick ties.

C. Grinding back and tuck pointing of spalled mortar joints at rusted shelf angles. Cleaning and treatment of ground back angle as specified in section 09 91 13, Exterior Painting.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications sections, apply to this section including but not limited to:

1.	Mortar, Grout and Polymer Modified Concrete	Section 04 05 14
2.	Unit Masonry	Section 04 20 00
3.	Exterior Paint	Section 09 91 13

1.03 REFERENCES

A. Refer to the following references for specification compliance:

1. 2012 IBC with SC Modifications
2. American Society for Testing and Materials (ASTM)
3. International Masonry Institute (IMI)
4. Brick Industry Association (BIA)

1.04 PROJECT CONDITIONS

A. Protect newly pointed joints from rain, until pointed joints are sufficiently hard enough to prevent damage.

B. Cold Weather Protection:

1. Tuck pointing may be performed in freezing weather when methods of protection are utilized.
2. Comply with applicable sections of "Recommended Practices for Cold Weather Construction" as published by International Masonry Industry All Weather Council.
3. Maintain surfaces at temperatures to prevent mortar from freezing or causing other damage to mortar.

1.05 WARRANTY

A. Installer’s Two Year Warranty: Contractor’s two year warranty on their company letterhead using sample contained in Section 01 77 00-Closeout Procedures.

1. Contractor will be required to attend a Post-Construction field inspection no

earlier than twenty- three months and no later than twenty-four months after the Date of Substantial Completion and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 MATERIALS

A. Tuck Pointing Mortar: Refer to Section 04 05 14- Mortar, Grout and Polymer Modified Concrete for mortar requirements.

PART 3 EXECUTION

3.01 PROTECTION

A. Protect adjacent Work areas and finish surfaces from damage during masonry tuck pointing work.

B. Provide temporary protection in areas of Work in progress. Protect occupants from harmful dust, airborne particles and debris.

C. Provide temporary barricades or signage as required by Owner to redirect occupants from areas of Work in progress.

3.02 REMOVAL OF EXISTING MORTAR JOINTS

A. Cut out existing mortar joints (both bed and head joints) and remove by means of a toothing chisel or a special pointer's grinder, to a uniform depth of 3/4-inch, or until sound mortar is reached. Take care to not damage edges of existing masonry units to remain.

B. Remove dust and debris from the joints by brushing, blowing with air or rinsing with water. Do not rinse when temperature is below freezing.

3.03 INSTALLATION

A. Immediately prior to application of mortar, dampen joints to be tuck pointed. Prior to application of pointing mortar, allow masonry units to absorb surface water.

B. Tightly pack mortar into joints in thin layers, approximately 1/4-inch thick maximum.

C. Allow layer to become "thumbprint hard" before applying next layer.

D. Pack final layer flush with surfaces of masonry units. When mortar becomes "thumbprint hard", tool joints.

E. Tooling of Joints

1. Tool joints with a jointing tool to produce a smooth, compacted, concaved joint.
2. Tool joints in patch work with a jointing tool to match the existing surrounding joints.

F. Replacement of Masonry Units

1. Cut out mortar joints surrounding masonry units that are to be removed and

replaced.

a. Units removed may be broken and removed, providing surrounding units to remain are not damaged.
b. Once the units are removed, carefully chisel out the old mortar and remove dust and debris.
c. If units are located in exterior wythe of a cavity or veneer wall, exercise care to prevent debris falling into cavity.

2. Dampen surfaces of the surrounding units before new units are placed.

a. Allow existing masonry to absorb surface moisture prior to starting installation of the new replacement units.
b. Butter contact surfaces of existing masonry and new replacement masonry units with mortar.
c. Center replacement masonry units in opening and press into position.
d. Remove excess mortar with a trowel.
e. Point around replacement masonry units to ensure full head and bed joints.
f. When mortar becomes "thumbprint hard", tool joints.

3.04 CLEANING

A. Clean exposed masonry surfaces on completion.

B. Remove mortar droppings and other foreign substances from wall surfaces.

C. First wet surfaces with clean water then wash down with a solution of soapless detergent specially prepared for cleaning brick.

D. Brush with stiff fiber brushes while washing, and immediately thereafter hose down with clean water.

E. Free clean surfaces from traces of detergent, foreign streaks or stains. Protect materials during cleaning operations including adjoining construction.

F. Use of muriatic acid for cleaning is prohibited.

END OF SECTION 04 05 24

SECTION 04 20 00

UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective replacement of damaged brick masonry units.

B. Cleaning of the building's entire exterior Facade.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Mortar, Grout, and Polymer Modified Concrete	Section 04 05 14
2.	Masonry Tuck Pointing	Section 04 05 24
3.	Fluid Applied Water Repellents	Section 07 19 00

1.03 SUBMITTALS

A. Refer to Specification Section 01 33 00-Submittal Procedures.

B. Product Data: For the following:

1. Samples: Review Owners existing veneer and match new veneer to existing for Engineer and Owner approval.

1.04 WARRANTY

A. Installer's Two Year Warranty: Contractor's two year warranty on their company letterhead using sample contained in Section 01 77 00-Closeout Procedures.

1. Contractor will be required to attend a Post-Construction field inspection no earlier than twenty- three months and no later than twenty-four months after the Date of Substantial Completion and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 BRICK

A. General: Provide shapes indicated and as follows for each form of brick.

1. Provide units without cores or frogs and with exposed surfaces finished for ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces.

B. Provide special shapes for applications requiring brick of size, form, color and texture on exposed surfaces that cannot be produced by sawing.

1. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints,

bond beams, sashes and lintels.

2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

C. Face Brick: ASTM C 216 and as follows:

1. Grade: SW
2. Initial Rate of Absorption: Between 5 and 20 g/30 sq in per minute when tested per ASTM C 67.
3. Surface Coloring: Brick with surface coloring, other than flashing or sand-finished brick, shall withstand 50 cycles of freezing and thawing per ASTM C 67 with no observable difference in the applied finish when viewed from 10 feet.
4. Type: FBS
5. Size: Bricks manufactured to the following actual dimensions within tolerances specified in ASTM C 216.
6. Where shown to "match existing", provide face brick matching color, texture, and size of existing adjacent brickwork.
7. Products: Subject to full compliance with the requirements, provide units from one of the following manufacturers:

    a. General Shale Brick
    b. Ashe Brick Co.
    c. Boren Brick Co.
    d. Cherokee Sanford Group, Inc.
    e. Statesville Brick
    f. Boral Brick Co.
    g. Taylor Clay Products
    h. Triangle Brick
    i. Lee Brick
    j. Engineers approved equivalent

2.02 MORTAR AND GROUT MATERIALS

A. Refer to Section 04 05 14- Mortar, Grout and Polymer Modified Concrete.

2.03 MASONRY CLEANER

A. Non-etching general purpose masonry concrete and brick cleaner.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Prepare written report the listing conditions detrimental to performance.
2. Verify that foundations are within tolerances specified.
3. Verify that reinforcing dowels are properly placed.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PROTECTION

A. Protect adjacent Work areas and finish surfaces from damage during unit masonry work.

B. Provide temporary protection in areas of Work in progress. Protect occupants from harmful dust, airborne particles and debris.

C. Provide temporary barricades or signage as required by Owner to redirect occupants from areas of Work in progress.

3.03 INSTALLATION, GENERAL

A. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units to provide a continuous pattern and to fit adjoining construction. Where possible, use full-size units without cutting. Install cut units with cut surfaces and, where possible, cut edges concealed.

B. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

C. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

D. Wetting of Brick: Wet brick before laying if the initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at the time of laying.

3.04 CONSTRUCTION TOLERANCES

A. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and the following:

B. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4 inch in 20 feet, nor 1/2 inch maximum.

C. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, nor 1/2 inch maximum.

D. For conspicuous horizontal lines, such as exposed lintels, sills, parapets, and reveals, do not vary from level by more than 1/4 inch in 20 feet, nor 1/2 inch maximum.

E. For exposed bed and head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.

3.05 MORTAR BEDDING AND JOINTING

A. Lay hollow masonry units as follows:

1. With full mortar coverage on horizontal and vertical face shells.
2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
3. For starting course on footings where cells are not grouted, spread out full mortar bed, including areas under cells.

B. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint).

3.06 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After all repointing work is completed, mortar is thoroughly set, and cured, clean exposed masonry and remaining exterior façade as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Engineer's approval of sample cleaning before proceeding with cleaning of masonry.
3. Clean brick by the bucket-and-brush hand-cleaning method described in BIA Technical Notes No. 20, using job-mixed detergent solution.
4. Do not allow cleaning solution to dry on exterior wall and thoroughly rinse using a maximum water pressure of 200 to 300 psi.
5. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2 applicable to type of stain on exposed surfaces.

3.07 MASONRY WASTE DISPOSAL

A. Remove masonry waste and legally dispose of off Owner's property.

END OF SECTION 04 20 00

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Rough Carpentry work required to facilitate installation of new roof assembly including:

1. Installation of new pressure treated wood blocking and plywood sheathing.
2. Re-securement of existing rough carpentry to remain in place.
3. Removal and replacement of damaged, rotted or deteriorated rough carpentry to match existing.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Preparation for Reroofing	Section 07 01 50
2.	Roof Insulation	Section 07 22 16
3.	Modified Bitumen Roofing	Section 07 52 16
4.	Sheet Metal Flashing and Trim	Section 07 62 00
5.	Roof Accessories	Section 07 72 00

1.03 REFERENCES

A. Refer to the following references, current edition for specification compliance:

1. 2012 International Building Code with SC Modifications
2. American Society for Testing and Materials (ASTM)
3. American Wood-Preserver's Association (AWPA)
    a. AWPA C1 All Timber Products-Preservative Treatment by Pressure Process
    b. AWPA C2 Lumber, Timber, Bridge Ties and Mine Ties – Pressure Treatment by Pressure Processes.
    c. AWPA C9 Plywood – Preservative Treatment by Pressure Processes
    d. AWPA C15 Wood for Commercial-Residential Construction Preservative Treatment by Pressure Process.
4. American Plywood Association (APA)
5. American National Standard
    a. ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems
6. Underwriters Laboratories, Inc. (UL)
7. FM Global/Factory Mutual Research (FM)

1.04 DEFINITIONS

A. Rough Carpentry includes carpentry work not specified as part of other Sections and

generally not exposed.

B. KDAT: Kiln Dried After Treatment.

1.05 SUBMITTALS

A. Refer to Section 01 33 00-Submittal Procedures for Submittals.

B. Manufacturer's Product Data Sheets for all materials specified certifying material complies with this specification.

1.06 QUALITY ASSURANCE

A. Contractor shall inspect wood to be installed for damage, warping, splits, and moisture content as defined by the applicable wood products industry standards. Materials that do not comply shall be rejected.

B. Rough carpentry installation shall present a smooth, consistent substrate for roof system and flashing installation.

C. Qualifications of workers: Provide sufficient, competent and skilled carpenters in accordance with accepted practices and supervisors who shall be present at all times during execution of this portion of the work, and who shall be thoroughly familiar with type of construction involved in this section and related work and techniques specified.

D. Moisture Content:

1. Treated wood products shall be KDAT.
2. Treated lumber used in the roofing assembly shall not be stored or installed in a manner exposing it to rain.
3. Moisture content of treated lumber shall be 19 percent or less before being covered/enclosed into roofing assembly.
4. Contractor shall be responsible for ensuring lumber is delivered, stored and installed at 19 percent or less moisture content.
5. Plywood shall be 18 percent or less before being covered/enclosed into roofing assembly.

E. Each piece of treated lumber and plywood shall bear the stamp of the AWPA Quality Mark, indicating compliance with the requirements of the AWPA Quality Control Program.

F. Lumber Standards: Comply with PS 20 and applicable rules of respective grading and inspecting agencies for species and products indicated.

G. Plywood Product Standards: Comply with PS 1 (ANSI A 199.1) or, for products not manufactured under PS 1 provisions, with applicable APA Performance Standard for type of panel indicated.

H. Installation of all required new rough carpentry for roofing and flashing terminations to ensure plumb, uniform and level metal flashings.

I. Rough carpentry installation shall ensure roof membrane flashing transitions are smooth for complete roof drainage and appearance.

J. Installation of all fasteners and associated materials to secure rough carpentry as detailed and specified.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Store a minimum of four inches above ground on framework or blocking. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks. Cover with protective waterproof covering providing for adequate air circulation and ventilation

B. Exposure to precipitation during shipping, storage or installation shall be avoided. If material does become wet, it shall be replaced or permitted to dry prior to covering or enclosure by other roofing, sheet metal or other construction materials (except for protection during construction).

C. Immediately upon delivery to job site, place materials in area protected from weather.

D. Do not store seasoned materials in wet or damp portions of building.

E. Protect sheet materials from corners breaking and damaging surfaces, while unloading.

PART 2 PRODUCTS

2.01 MATERIALS

A. Lumber: Shall Be No. 2 or better spruce or southern yellow pine. Shall be sound, thoroughly seasoned, dressed to nominal finish dimension, and free of warpage, cupping, and bowing. Dimensions shall be determined by job conditions or as indicated in detail drawings.

B. Plywood Sheathing: Shall be structural 1 rated. Plywood shall be stamped APA RATED SHEATHING grade-C or better, and shall be manufactured with exterior glue (exposure 1). Plywood shall have a minimum thickness of 3/4 inch or as required to match existing.

C. Wood Pressure Treatment: Alkaline Copper Quaternary (ACQ) pressure-treatment conforming to AWPA Standard C-2 (above ground) with 0.25 to 0.40 lbs per cubic foot retention rate.

2.02 FASTENERS

A. General:

1. All fasteners shall be stainless steel or as approved by Engineer.
2. Fasteners securing pressure treated lumber shall be manufactured for corrosion resistance and exposures associated with pressure treated wood applications.
3. Nails shall not be used at roof edges to fasten rough carpentry, lumber, plywood, etc. Screws, anchors, and/or machine bolts shall be used to secure rough carpentry at roof perimeter edges.
4. Masonry screws, spikes, and drive-pins shall not be used to fasten edge/perimeter nailers to gypsum deck. Minimum 1/2-inch diameter anchors or bolts shall be used to secure roof edge nailers to gypsum substrates.

B. Wood to steel deck and light gage steel framing (18-ga. or less):

1. Shall be corrosion resistant, ASTM A153, FM Approved, self-drilling and self-tapping screw, type and length to provide minimum 3 pitches of thread through metal thicknesses. Acceptable manufacturers include:

    a. ITW Buildex
    b. Powers Fasteners, Inc.
    c. Olympic Manufacturing Group
    d. Construction Fasteners, Inc.
    e. Engineers accepted equivalent.

C. Wood to wood:

1. Screws: No. 10 or greater, stainless steel wood screws, or insulation screws. Length to embed into base substrate a minimum of 1-1/2 inch.
2. Nails: 8, 10 or 16 penny, stainless steel, ring shank nails. Length to embed into base substrate a minimum 1-1/2 inch. Acceptable manufacturers include:

    a. Maze Nails
    b. Anchor Staple and Nail
    c. Swan Secure Products
    d. Manasquan Premium Fasteners
    e. Engineers accepted equivalent.

D. Wood to solid concrete substrates:

1. Drive pin type soft metal expansion anchor with stainless still pin or screw, minimum 1/4 inch diameter. Length to provide minimum 1 inch embedment into substrate. Acceptable manufacturers include Zamac Nailin by Powers Fasteners, Nailcon by ITW Buildex, HIT Anchors by Hilti, Hammer-Set Anchors by Red Head or engineers accepted equivalent.
2. Masonry screws, 1/4-inch minimum diameter, Type 410 stainless steel. Length to provide minimum 1 inch embedment into substrate. Acceptable manufacturers include Tapcon by ITW Buildex, KWIK-CON II by Hilti or engineers accepted equivalent.

E. Wood to brick, concrete block, other masonry units, and solid concrete substrates:

1. Adhesive anchoring system: Minimum 1/2 inch diameter, corrosion resistant threaded rods supplied by the anchoring system manufacturer. Screen for hollow masonry provided by fastener manufacturer. Corrosion resistant nut and 1-1/2 inch diameter flat washer. Acceptable manufacturers include:

    a. Powers Fasteners, Inc. Chem-Fast Anchoring System
    b. Powers Fasteners, Inc. AC100 Anchoring System
    c. ITW Ramset Epcon System
    d. Engineers accepted equivalent

F. Wood to solid gypsum substrate:

1. Masonry screws, 1/4 inch minimum diameter, Type 410 stainless steel. Length to provide minimum 1 inch embedment into substrate. Acceptable manufacturers include Tapcon by ITW Buildex, KWIK-CON II by Hilti or engineers accepted equivalent.

G. Wood to structural steel and light gage steel framing (greater than 18-GA.):

1. Corrosion resistant, self-drilling/self-tapping, or pre-drilled/self-tapping fastener of size, type and length to provide minimum steel penetration required by manufacturer. Thread type required for steel thickness and type. Provide corrosion resistant flat washer at screw head. Countersink into wood blocking Acceptable manufacturers include:

   a. ITW Buildex Teks #5 Drill Point Screws
   b. Powers Fasteners, Inc.
   c. Construction Fasteners, Inc.
   d. Engineers accepted equivalent

2. Machine bolts with minimum 1/2 inch diameter, stainless steel or hot dipped galvanized with matching nut and minimum 2 inch diameter washer against countersunk nailer. Length to penetrate nailer and structural steel, with bolt head exposed on underside of structural steel.

H. Wood to Grouted Cavity:

1. Grout: High strength, non-metallic, non-shrink grout for precision grouting and general construction Conform to ASTM C476 and ASTM C 1107. Acceptable manufacturers include Commercial Grade Quikrete, Precision Grout, Kauffman SureGrout or Engineers accepted equivalent. Grout type proportioned by volume as follows:

   a. Portland cement or blended hydraulic cement: one part.
   b. Hydrated lime: 0 to 1/10 part.
   c. Fine aggregate: 2-1/4 to three times sum of volumes of cement and lime used.
   d. Coarse aggregate: one to two times sum of volumes of cement and lime used.
   e. Sum of volumes of fine and coarse aggregates: Do not exceed four times sum of volumes of cement and lime used.

2. Bolt: corrosion resistant threaded J bolt meeting ASTM A 307, Grade A with ASTM A 563 hex nuts and flat washers, diameter of 1/2-inch.

PART 3 EXECUTION

3.01 INSPECTION

A. Contractor shall inspect substrates to receive rough carpentry, and ensure substrates are in satisfactory condition prior to installation of rough carpentry.

B. Contractor shall inspect all new and existing rough carpentry including fasteners for material condition before proceeding with installation. Deteriorated, rotted, damaged, split, warped, twisted or wet materials shall be removed and replaced with specified materials. Refer to Section 01 22 00-Unit Prices.

C. Contractor shall remove old cants, tapered edge strips, debris, old fasteners, etc. that interfere with the installation of new rough carpentry.

D. Contractor shall notify Engineer in writing of unsatisfactory conditions.

E. Commencement of work signifies Contractor's acceptance of substrates. Any defects in roofing work resulting from such accepted substrates shall be corrected at no additional expense to the Owner.

3.02 PREPARATION

A. Steel/Metal Substrates:

1. Any pressure treated wood to contact steel or metal shall have the steel/metal coated with a heavy coating of asphalt primer.

B. Roof Deck and Structure:

1. Roof deck and structure shall be dried and broomed and/or vacuumed clean of debris and foreign matter prior to installation of the new rough carpentry.
2. Contractor shall adjust substrates to receive rough carpentry to ensure completed rough carpentry installation is acceptable for roofing and sheet metal flashings.
3. Steel decking shall be coated with a uniform, heavy application of asphalt primer, or separated by membrane or other acceptable means to prevent contact between steel and treated wood products.
4. Treated lumber shall not make direct contact with light gage steel decking.

C. Masonry Walls:

1. Adhesive anchors:

   a. Contractor shall follow adhesive anchor manufacturer's published instructions for preparation and installation.
   b. Pre-drill hole or clean-out existing gap/hole for adhesive anchors.
   c. Use compressed air to blow-out all dust and moisture. Dust and moisture will result in failure of anchors and shall be removed before installing adhesive anchors.

2. Grouted anchors:

   a. Contractor shall follow grout manufacturers published instructions for preparation and installation.
   b. Clean masonry cavity and install grout stop to prevent grout from entering below the desired cavity area.

3.03 INSTALLATION

A. Remove existing damaged or deteriorated wood blocking, nailers, and curbs and replace with new material of same dimensions.

B. Re-secure all existing wood nailers at roof edges that are to remain. Fastener type and spacing shall comply with this specification.

C. Install new wood blocking, nailers, and curbs to achieve a minimum eight inch flashing height above the roof membrane. Wood nailers at perimeter roof edges and expansion joints shall be installed to match insulation height. Maintain constant nailer height at perimeter edges.

D. Set rough carpentry to required levels and lines, with members plumb, true to line,

material cut to fit, and braced to hold work in proper position. Use a belt sander to remove any obtrusive surface irregularities. Drive nails and spikes home; and pull bolt nuts tight with heads and washers in close contact with the wood.

E. Fit rough carpentry to other construction; scribe and cope for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction. All joints between wood shall be installed for a smooth transition.

F. Attachment:

1. The Contractor shall consult the fastener manufacturer's published literature and follow the recommended requirements for pre-drilling, cleaning, placement and compatibility of substrates. Follow manufacturer's requirements for fasteners spacing, substrate preparation and substrate embedment where not specified.
2. Securely attach rough carpentry work to substrate with fasteners. Anchor to resist a minimum force of 300 lbs/lineal foot in any direction.
3. Rough carpentry attachment shall meet the requirements herein and that of the current FM Loss Prevention Data Sheet 1-49, Perimeter Flashing.
4. Fasteners heads for screws, anchors and bolts terminating at the surface of nailers shall be provided with a minimum 5/8 inch diameter, stainless steel or similar corrosion resistance flat washer provided by fastener manufacturer, unless washer is provided from factory as part of the fastener assembly.
5. Install bolts flush with the top surface of nailers where possible to avoid countersinking. Bolt bottom nailers then fasten upper nailers where possible. Countersink bolts, nuts and screws flush with wood surfaces only as detailed.
6. Install fasteners without splitting wood. Pre-drill where necessary. Split or damaged wood shall be removed, or repaired and/or re-secured to provide acceptable conditions.
7. For anchors, pre-drill concrete and masonry units to prevent damage or cracking of the masonry. Consult fastener manufacturer's published guides. Damaged masonry shall be repaired, and fasteners shall be removed and re-installed in an acceptable location.
8. Fastener spacing: Fasteners shall be staggered 1/3 the board width and installed within 6 inches of each end.

    a. Bolts, adhesive anchors, wedge and sleeve anchors, and machine bolts securing nailers shall be spaced 48 inches on center, staggered and an additional fastener within 6 inches of each end of nailer to prevent boards from twisting at board joints.
    b. Screws and 1/4 inch diameter anchors securing wood to concrete or masonry units shall be spaced 12 inches on center maximum, staggered, with fasteners installed at each end of nailer lengths to prevent wood from twisting at board joints.
    c. Screws securing wood to wood shall be installed 12 inches apart, staggered, with two screws installed within 6 inches of each end of nailer lengths to prevent wood from twisting at board joints.
    d. Screws securing wood to steel decking shall be 12 inches apart.
    e. Self-drilling, and/or pre-drilled self-tapping screws securing wood to structural steel shall be spaced 12 inches apart, staggered, with one screw within 6 inches of each end of nailer lengths to prevent wood from twisting at board joints.
    f. Nails securing wood to wood shall be spaced 12 inches apart, staggered, with two nails installed within 6 inches of each end of nailer lengths to prevent wood from twisting at board joints.

G. Select fasteners of size and length that will not be exposed from the building interior and/or from the ground, or remove protruding fasteners, paint or finish to eliminate exposure.

H. Thickness of wood nailers shall be flush with adjacent insulation and other materials. Additional fasteners shall be installed to ensure nailers are flush.

I. Unless otherwise detailed, plywood used as blocking or shim shall be installed below dimensional lumber such that the fastener head terminates at the dimensional lumber surface.

J. Wood nailers at roof perimeters, expansion joints, roof area dividers, etc. shall not be less than 3 feet long.

K. When multiple nailers are installed stacked two high or more, offset nailers no less than 12 inches such that joints at nailer end do not line-up vertically.

L. Each end of nailers shall be fastened with additional fasteners to ensure a smooth transition at butted joints, and to prevent warping and/or twisting.

M. Shims:

1. The Contractor shall add plywood and lumber shims as required for the specified height and thickness.
2. Shims shall make full contact with stacked rough carpentry. Partial shim contact, and small shim pieces spaced apart are not acceptable.
3. Plywood used as blocking or shim shall be installed below dimensional lumber such that the fastener head terminates at the dimensional lumber surface.

N. Curbs:

1. Adjust wood curbs to support rooftop piping, ducts, equipment, etc.
2. Raise equipment to provide required flashing height for roofing.

3.04 CLEAN-UP

A. The Contractor shall ensure the site and building are cleaned to meet pre-construction conditions, as accepted by the Owner.

B. The site and building shall be free of saw dust from pressure treated lumber, fasteners and other debris.

C. Damages to the building, grounds, equipment and site shall be repaired or replaced by the Contractor to meet pre-construction conditions, as accepted by the Owner.

END OF SECTION 06 10 00

DIVISION 07 THERMAL AND MOISTURE PROTECTION

SECTION 07 01 50

PREPARATION FOR REROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preparatory work to be completed prior to roof installation including removal of existing roof assemblies down to the structural deck.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Rough Carpentry	Section 06 10 00
2.	Fluid Applied Water Repellent	Section 07 19 00
3.	Roof Insulation	Section 07 22 16
4.	Modified Bitumen Roofing	Section 07 52 16
5.	Sheet Metal Flashing and Trim	Section 07 62 00
6.	Through Wall Flashing	Section 07 65 00
7.	Roof Accessories	Section 07 72 00

1.03 DEFINITIONS

A. Removal: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain property of the Owner.

B. Existing to remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Engineer, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

C. Material ownership: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site.

1.04 EXISTING ROOF ASSEMBLIES*

A. Sector A

1. Loose stone ballast
2. Thermoset single ply membrane
3. 1 inch expanded polystyrene insulation
4. Varying thickness (+/- 3-3/4 inch to 5-1/2 inch) lightweight concrete
5. Structural concrete deck

B. Sector B

1. Loose stone ballast
2. Thermoset single ply membrane
3. 3/4-inch expanded polystyrene insulation
4. Varying thickness (+/- 2-1/2 inch to 6-3/4 inch) lightweight concrete

5. Structural concrete deck

C. Sector C

1. Loose stone ballast
2. Thermoset single ply membrane
3. 1 inch expanded polystyrene insulation
4. Varying thickness (+/- 3-3/4 inch to 5-1/2 inch) lightweight insulating concrete with extruded polystyrene insulation
5. Structural concrete deck

D. Sector D

1. Gravel surfacing
2. Built-up roof
3. Varying thickness (+/- 3 inch to 5 inch) lightweight concrete
4. Metal deck

E. Sector E

1. Loose stone ballast
2. Thermoset single ply membrane
3. 1 inch expanded polystyrene insulation
4. Varying thickness (+/- 4-1/2 inch to 6 inch) lightweight concrete
5. Structural concrete deck

F. Sector F

1. Gravel surfacing
2. Built-up roof
3. +/- 1/4-inch concrete
4. Wood deck

G. Sector G

1. Loose stone ballast
2. Thermoset single ply membrane
3. 1 inch expanded polystyrene insulation
4. Structural concrete deck

*Roof system composition is based on random sampling. Contractor is responsible for verification of roof system composition.

1.05 SUBMITTALS

A. Refer to Section 01 33 00-Submittal Procedures for Submittals.

B. Manufacturer's Product Data Sheets for all materials specified certifying material complies with this specification.

C. Submit Fastener Withdrawal Test results from manufacturer of fastener tested or by roof manufacturer.

D. Submit Adhesion Pull Test results from manufacturer of adhesive tested or by roof manufacturer.

E. Submit drawing indicating locations of existing electric bird relocation system including cables, connectors, ground wire, wire field, insulators, anchors, straps, clamps and steel springs.

1.06 QUALITY ASSURANCE

A. Qualifications: Previous experience removing existing roof systems.

B. Requirements: Contractor to comply with governing EPA regulations and hauling/disposal regulations of authorities having jurisdiction.

1.07 SCHEDULING

A. Conduct demolition so that Owner's operations will not be disrupted.

B. Refer to Section 01 14 00-Work Restrictions.

1.08 WARRANTIES

A. Any damage to existing items under warranty shall be repaired/replaced with materials acceptable to the Warrantor.

PART 2 PRODUCTS

2.01 ROOF DECK REPAIR MATERIALS

A. Structural Concrete Deck Repair

1. ASTM C 90, Type 1 or 2 as specified above, Grade S-1 or S-II, except units exposed to weather shall be Grade N-1 or N-II, and made with lightweight aggregates. Acceptable manufacturers:

    a. Johnson Concrete
    b. Adams
    c. Metromont
    d. Engineers approved equivalent

B. Lightweight Concrete Fill

1. Lightweight insulating concrete patching compound incorporating cementitious binders, low density fine aggregates, and additives supplied by a single manufacturer.

C. Galvanized Steel Plates for Concrete Deck Openings of size to extend a minimum of 6 inches beyond opening on each side of thickness as indicated in Contract Drawings.

1. Deck Openings of 2 feet or less in one direction: 18-ga.
2. Deck Openings of greater than 2 feet and less than 4 feet in one direction: 1/8-inch.
3. Deck Openings of greater than 4 feet and less than 5 feet in one direction: 3/16-inch galvanized.

D. Wood Deck: Refer to Section 06 10 00.

E. Steel Deck:

1. Rust-Inhibitive Paint:

a. Galvanized Metal Primer:

i. Basis of Design: Sherwin Williams B66W00310 – Pro Industrial Pro-Cryl Universal Acrylic Primer
ii. Color: Off White

2. Steel Metal Primer

a. Basis of Design: Sherwin Williams B50NZ0006 – Kem Kromik Universal Metal Primer

i. Color: Brown

3. Galvanized and Steel Metal Finish

a. Basis of Design: Sherwin Williams B66W00651 – Pro Industrial High Performance Acrylic Semi-Gloss.

4. Roof Deck: FM Approved or UL listed 22 gauge minimum; factory primed steel profile to conform to existing deck profile at end and side laps.
5. Roof Deck Fasteners:

a. Deck-to-structural steel: Fasteners shall be FM Approved, self-drilling deck fasteners of length and type as required by fastener manufacturer for thickness of structural steel. Acceptable manufacturer's include:

i. ITW Buildex Corp. Tek 5
ii. SFS Stadler, Inc. SX 14 - Self Drill

b. Deck-to-deck side lap fasteners: Fasteners shall be FM Approved self-drilling deck side lap fasteners of length and type as required by fastener manufacturer for thickness of steel deck. Acceptable manufacturer's include:

i. ITW Buildex Corp. Tek 3
ii. SFS Stadler, Inc. SL2 Free Spin Lap Self Drill

F. Galvanized Steel Plates for Deck Openings of size to extend a minimum of 6 inches beyond opening on each side of thickness as indicated in Contract Drawings.

1. Deck Openings of 2 feet or less in one direction: 18-ga.
2. Deck Openings of greater than 2 feet and less than 4 feet in one direction: 1/8-inch.
3. Deck Openings of greater than 4 feet and less than 5 feet in one direction: 3/16-inch galvanized.

2.02 EXISTING ROOF ACCESS DOOR

A. Fasteners: Refer to Section 07 62 00-Sheet Metal Flashing and Trim.

B. Threshold Cap: 1/8-inch minimum thickness, stainless steel door threshold cover plate.

C. Counterflashing: Refer to Section 07 62 00-Sheet Metal Flashing and Trim.

D. "U" Metal: Constructed of 18 gauge stainless steel, profile as indicated on Contract Drawings.

2.03 ROOF DRAIN COMPONENTS

A. Approved manufacturers:

1. Jay R. Smith Mfg. Company
2. Josam Campany
3. Zurn Industries, LLC
4. Engineer approved equivalent

B. Drain Clamping Ring: Cast iron drain clamping ring designed for retrofit roof applications where the existing main roof drain body is to remain. Diameter shall match existing rood drain clamping ring to be replaced.

C. Drain Dome: Cast iron drain dome, sized to lock into new drain clamping ring.

PART 3 EXECUTION

3.01 EXAMINATION

A. Locate and submit drawing indicating locations of existing electric bird relocation system including cables, connectors, ground wire, wire field, insulators, anchors, straps, clamps and steel springs.

B. Survey existing conditions to determine extent of demolition.

C. Record the conditions of items to be removed/reinstalled and items to be removed/salvaged.

D. Contractor shall not remove any element that may result in structural deficiency or collapse of any part of the structure or adjacent structures during demolition.

E. Contractor to inspect substrate for soundness and notify Engineer in writing of any deficiencies. Commencement of work signifies Contractor's acceptance of site conditions.

F. Before removing decking, cutting decking or fastening decking, the Contractor shall inspect interior conditions under the deck to prevent cutting or damaging the joists, electrical conduit, sprinkler piping, fixtures and utilities. The Contractor shall ensure conditions are satisfactory before proceeding with the work, and continuously monitor interior and exterior work conditions during demolition and construction operations.

3.02 UTILITIES/SERVICES

A. Maintain existing utilities that are to remain in service and protect them against damage during selective site demolition unless authorized in writing by the Owner and authorities having jurisdiction.

1. Locate all conduits and equipment attached to the underside of the decking prior

to reroofing. Insulation fastener locations are not to disturb existing conduits or interior components/equipment.

2. If utilities serving occupied portions of the site must be shut down, temporary services shall be provided.
3. Provide 72 hours notice to Owner if shut down is required.
4. Where services are to be removed, relocated or abandoned, provide necessary bypass connections to remaining occupied buildings and areas.

3.03 PREPARATION

A. Do not begin demolition until utilities have been disconnected/sealed and have been verified as such in writing.

B. Do not close off or obstruct streets, walks or other adjacent occupied facilities without permission from Owner and authorities having jurisdiction.

C. Provide safe conditions for pedestrians. Erect temporary protection such as walkways, fences, railings and canopies as required by OSHA and other governing authorities.

D. Provide protection for adjacent building, appurtenances and landscaping to remain. Erect temporary fencing around trees to remain.

E. Provide temporary weather protection as required to prevent water leakage and damaged to exterior or interior of adjacent structures.

F. Use a tarp on PVC materials that are placed near the tear-off so that asphalt, coal tar, other contaminates, or dust does not get on the new membrane. Develop a work plan to make sure that coal tar or asphalt-contaminated shoes or boots do not get on the membrane. Complete the entire asphalt or coal tar tear-off before beginning the PVC installation.

3.04 POLLUTION CONTROLS

A. Use water, mist, temporary enclosures and other suitable methods to limit the spread of dust and dirt. Comply with local EPA regulations.

1. Do not use water where damage may occur or where hazardous conditions would be created such as ice or flooding.

3.05 REMOVALS

A. Remove and discard existing antenna and guy wire supports where indicated.

B. Remove and store offsite for reinstallation existing electric bird relocation system. Reinstall as indicated on Contract Drawings.

1. Store materials out of direct exposure to the elements, above ground level and at site location acceptable to Owner.

C. Demolish and remove existing construction only to the extent required by new construction.

1. Only as much of the existing roofing as can be made weathertight each day shall be removed.

D. Remove existing roof assembly to the structural deck, including flashings, pitch pockets and sheet metal and discard.

E. Remove accumulation of excess asphalt, coal tar or other irregularities so as to produce an acceptable substrate to the membrane manufacturer for insulation installation.

F. Remove debris asphalt, and coal tar from existing materials to provide clean, dry substrate acceptable to the membrane manufacturer for installation of new materials.

G. Remove and discard flashings at pipe penetrations.

H. Remove or correct any obstruction which might interfere with the proper application of new materials.

I. Lift or remove all existing equipment so that existing flashings can be totally removed and new flashings installed.

J. Lift existing sheet metal flashings to remain to remove all existing materials. After installation of new materials, neatly bend flashing back into place.

K. Demolish asphalt, coal tar, concrete and masonry in small sections. Cut concrete and masonry at juncture with construction to remain using powered masonry saw, core drill or hand tools. Do not use powered impact tools.

L. Remove and transport debris in a manner that will prevent damage/spills to adjacent buildings and areas.

M. Dispose of demolished items and materials on a daily basis. On-site storage of removed items is not permitted.

N. Transport demolished materials off-site and dispose of materials in a legal manner.

O. Perform progress inspections to detect hazards resulting from demolition activities.

3.06 FLASHING HEIGHTS

A. Permanently raise roof top equipment as required to achieve 8 inch minimum flashing height.

B. Provide additional wood blocking to top of parapet walls and expansion joints to achieve minimum 8 inch flashing height.

C. Extend all existing sanitary vents to height required by the applicable Plumbing Code, but no less than 8 inches and no more than 12 inches above the finished roof system.

3.07 EXISTING ROOF ACCESS DOOR MODIFICATION

A. Carefully remove existing steel door. Cleanly and neatly cut the bottom of the steel door to fit within new opening.

B. Provide temporary dust screen consisting of high density mesh for use to prevent pollen, dust and debris from entering structure.

C. Modify existing roof access door threshold as required for flashing installation and as indicated on Contract Drawing.

D. Install new wood blocking to raise existing threshold a minimum of 8 inches above finished roof height.

E. "U" Metal shall be secured to existing door to remain 6 inches on center and as indicated on Contract Drawings.

F. Install new threshold cap as indicated and seal. Secure threshold cap to new nailer with 2 rows of fasteners installed 12 inches on center, staggered.

G. Refer to Section 07 62 00-Sheet Metal Flashing and Trim for counterflashing fabrication and installation.

3.08 STRUCTURAL CONCRETE REPAIR

A. Repair any depressions and/or areas where reinforcing has become exposed in the existing structural concrete decking.

1. Cracks and or camber differentials greater than 0.1875 of an inch shall be repaired using an appropriate cementitious grout or fill, and feathered to promote a smooth transition.
2. Joints between prestressed panel units and over bulb-tees shall be taped, stripped or grouted with an appropriate cementitious fill.
3. All surface irregularities shall be leveled to ensure complete contact with the decking for insulation bonded in specified adhesive.

B. Remove all loose, wet, and deteriorated existing concrete fill from repair area.

C. Mix concrete fill with water utilizing ratios, quantities, and methods recommended by the manufacturer.

D. Slowly pour fill into repair area and screed off flush with surrounding existing fill.

E. Insulation installation shall not begin until concrete fill has cured to meet the requirements of the roof membrane manufacturer.

3.09 LIGHTWEIGHT CONCRETE FILL

A. Remove all loose, wet, and deteriorated existing lightweight concrete fill from repair area.

B. If fill is wet or deteriorated down to the steel form deck, refer to Steel Deck Repair below.

C. Mix lightweight concrete fill with water utilizing ratios, quantities, and methods recommended by the manufacturer.

D. Slowly pour lightweight fill into repair area and screed off flush with surrounding existing fill.

1. Installation of insulation may begin after the new fill has set to meet the requirements of the membrane manufacturer.

3.10 STEEL DECK REPAIR

A. Where steel deck is rusted but remains structurally sound, thoroughly clean deck units of

rust and foreign matter with a wire brush. Paint with specified metal primer.

B. Where steel deck is damaged or rusted through in small areas, clean deck units of rust with a wire brush. Paint with specified metal primer. Install over the damaged area a steel plate secured to the existing steel deck with sheet metal screws around the perimeter of the plate at 6 inches on center. Extend the new steel plate a minimum of 6 inches onto the surface of the existing steel deck beyond the damaged area.

C. Where steel deck units are severely damaged or have deteriorated over large areas, remove the entire existing deck unit and install new decking of the same type and gauge as the existing. Lap new deck units over the existing the same manner as originally installed but not less than 6 inches. Lap ends only over structural framing. Secure to structural framing with specified fasteners at 6 inches on center at each framing member. Secure deck side laps at not more than 36 inches on center.

D. Workers shall apply their weight over the area being fastened to prevent deck deflection and ensure complete contact between fasteners, deck and/or structural steel.

3.11 STEEL PLATE INSTALLATION

1. Mechanically attach deck repair plates to concrete deck with approved fasteners 6 inches on center or a minimum of 2 fasteners per side.

3.12 COUNTERFLASHING PREPARATION

A. Counterflashing to Remain: Neatly bend existing counterflashing up at walls as required to completely remove existing base flashings and to install new base flashings. After installation of new base flashings, neatly bend counterflashing back in place using sufficient care to prevent deformation to the finished counterflashing.

B. Receiver Flashing to Remain: Neatly bend existing receiver up at walls as required to completely remove existing base flashings and counterflashings and to install new base flashings and counterflashings. After installation of new base flashings and counterflashings, neatly bend counterflashing receiver back in place using sufficient care to prevent deformation to the finished counterflashing.

C. Saw reglet to a minimum depth of 1-1/2 inches in a straight line to allow proper installation of new counterflashings. Utilize all procedures necessary including, but not limited to, saw guides to ensure straight, clean reglets.

3.13 SCUPPER INSTALLATION

A. Locate bottom of overflow scupper 2 inches above surface of the roof system adjacent to the nearest roof drain (excluding sump).

B. Remove existing masonry and store for reuse if in good condition. Reinstall masonry units to extent possible. Provide new brick or concrete masonry units to match existing.

C. Extend opening through entire thickness of parapet. Take precautions to avoid damaging adjacent wall surfaces.

D. Provide finished openings of 8 inch width and 7 inch height after membrane installation.

E. Install veneer materials of same type, size and finish to match existing. Set units in full beds of mortar to match adjacent joints in thickness. Tool joints to match.

F. Repair exterior finish to match adjacent surfaces.

3.14 ROOF DRAINS AND LEADERS

A. Prior to commencement of any work on the project the Contractor shall inspect each existing roof drain for damage and water flow.

1. Each drain shall be cleaned of accumulated debris and loose gravel. Drain bowl and drain outlet shall be cleaned of bitumen build-up to bare metal by hand scraping.
2. A power vacuum shall be provided by the Contractor and utilized to vacuum debris, loose gravel, and bitumen scrapping. Vacuum hose shall be of sufficient length to reach the first elbow in the drain line in order to vacuum the line.
3. After cleaning bitumen from the drain bowl, Contractor shall inspect the bowl carefully for cracks, and the drain pipe connection for possible deterioration.
4. Each drain shall be water tested for proper flow utilizing a minimum 3/4-inch hose. Water shall flow into the drain line under maximum pressure available for a period of not less than 15 minutes.
5. Drain inspection and testing operation shall precede any roofing tear-off. If deficiencies or damages are observed, Contractor shall record the deficiency on a Roof Plan and forward to the Engineer. The Engineer will notify the Owner's Maintenance Department accordingly. Contractor shall allow 48 hours after notification for any corrective work by the Owner.
6. If no deficiencies or damages are reported to the Owner prior to commencement of work, Contractor shall assume full responsibility for the condition and operation of the drains.
7. Contractor shall install temporary drain plugs while performing any work at or near the roof drains. Drain plugs shall be removed at the end of each work day.

B. Roof drain lowering

1. Inspect all existing drain bowls for elevation relative to top surface of roof deck.
2. Remove vertical portion of drain leader and lower bowl so flange is located where indicated in Contract Drawings.

C. Roof drain components

1. Install new drain components in accordance with the manufacturer's recommendations and Contract Drawing requirements.

3.15 FASTENER WITHDRAWAL TESTS

A. Conduct fastener pull tests in accordance with ANSI/SPRI FX-1-2006 requirements. Provide a report along with a roof plan showing test locations and corresponding withdrawal value of each pull test. Minimum withdrawal value to be 40 pounds. Testing to be performed either by manufacturer of fasteners tested or by roof manufacturer.

3.16 ADHESION PULL TESTS

A. If required by the membrane manufacturer, conduct adhesion pull tests in accordance with the membrane manufacturer's requirements. Tests shall not be performed in close

proximity with one another. Provide a report along with a roof plan showing test locations and corresponding withdrawal value of each pull test. Testing to be performed either by manufacturer of adhesive tested or by roof manufacturer.

3.17 CLEANING

A. Inspect the site daily and clean up debris and hazards at the end of each day. Adjacent roads, drives and walkways shall remain in operation and free from construction materials debris.

B. Clean adjacent structures of dust dirt and debris. Return adjacent areas to original conditions to the satisfaction of the Owner.

C. Clean all exposed metal surfaces such as pipes, pipe sleeves, drains, duct work, etc., by removing loose paint, rust and any asphalt or coal tar pitch of any kind.

END OF SECTION 07 01 50

SECTION 07 19 00

FLUID APPLIED WATER REPELLENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preparation of walls and application of water repellent treatment to existing masonry walls where indicated including protection of adjacent surfaces, and cleaning of residue.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Mortar, Grout, and Polymer Modified Concrete	Section 04 05 14
2.	Masonry Tuck Pointing	Section 04 05 24
3.	Unit Masonry	Section 04 20 00

1.03 REFERENCES

A. Municipal and State regulations governing cleaning, scaffolding and protection of adjacent properties.

1.04 SUBMITTALS

A. Refer to Section 01 33 00-Submittal Procedures.

B. Latest edition of the Manufacturer’s current material specifications and installation instructions.

C. Manufacturer’s Product Data Sheets for all materials specified.

D. Certifications by manufacturers that all materials supplied comply with all requirements of the identified ASTM and other industry standards or practices.

1.05 DELIVERY, STORAGE AND HANDLING

A. Furnish materials in manufacturer's packaging, complete with instructions for use.

B. Store materials out of direct exposure to the elements using tarps and elevated off ground on pallets.

1.06 JOB CONDITIONS

A. Environmental conditions:

1. Do not patch, repoint, wash down or wet surfaces when temperature may drop below 40 degrees F within 24 hours.
2. Do not use any process creating dust or dirt when wind speed is over 15 miles per hour.

B. Protection

1. Protect windows, doorways, trim, roof and other surfaces from damage and immediately remove stains, efflorescence, or other unsightly excess resulting from the work of this section.
2. Protect existing surfaces and surrounding yards or landscape from damage due to work in this section.

1.07 WARRANTY

A. Installer's Two Year Warranty: Contractor's two year warranty on their company letterhead using sample contained in Section 01 77 00-Closeout Procedures.

1. Contractor will be required to attend a Post-Construction field inspection no earlier than twenty- three months and no later than twenty-four months after the Date of Substantial Completion and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 MATERIALS

A. Water: Clean and potable.

B. Water Repellent: Isobutyltrialkoxysilane 40% minimum active penetrating ingredient as manufactured by:

1. Evonik Protectosil Chem-Trete PB VOC
2. Pecora Corporation Klere-Seal 940-S VOC
3. Sika Sikagard 701W
4. Hydrozo MasterProtect H 177
5. Engineers accepted equivalent

PART 3 EXECUTION

3.01 PREPARATION

A. Cover, protect, and mask adjacent areas, materials and surfaces not receiving work of this section to be adequately protected from damage.

B. Schedule with Engineer and Owner and protect all entrances to building with appropriate warning signs and barricades. Protect all persons and property including pedestrian traffic.

3.02 WATER REPELLENT TREATMENT

A. Surface Preparation

1. Surfaces to receive sealer shall be cleaned of dirt, oil, grease, laitance, and other contaminants. Oil, grease and other automotive contaminants shall be removed with degreasers. Remove dirt, dust and materials that will interfere with the proper and effective application of the penetrating sealer. It is the responsibility of the Contractor to prepare the surfaces of the substrate to a condition acceptable to the Engineer and Owner.
2. Check the compatibility of any materials to be used with the penetrating sealer.
3. Sealants and patching materials shall have been installed and approved.

B. Field Quality Control

1. Spray Test

   a. After water repellent has dried, spray coated surfaces with water.
   b. After surfaces have adequately dried, recoat surfaces that show water absorption.

2. Manufacturer's Field Services

   a. Provide written certification that surface preparation methods and final condition have manufacturer's approval and comply with the warranty.
   b. Furnish test area: Furnish results of test area absorption on each type of substrate. Test results shall determine application rate.

3. Substrate Preparation Mock-up

   a. Before substrate preparation and product test mock-up, the following field evaluation will be done.
   b. Prepare a five foot by five foot area for each preparation method to be evaluated by the Owner, Engineer, Manufacturer's Representative, and Contractor.

4. Product Test Area

   a. Before a sealer application, the following field evaluation will be done.
   b. Prepare a three-foot by three-foot area for each test area to be sprayed with the water repellent. The area will be determined by the Engineer and Owner. Apply the water repellent at a rate to achieve a flood coat application. If recommended by the manufacturer, apply a second coat of the water repellent.
   c. After allowing five days for the sample to cure, run a RILEM uptake test on the treated area (s).

C. Application

1. Product shall be applied as supplied by the manufacturer without dilution or alteration, unless noted in the manufacturer's data sheet.
2. Apply with low pressure (15 psi) airless spray equipment with a fan spray coarse nozzle, flooding the surface to obtain uniform coverage unless otherwise recommended by the manufacturer.
3. Apply at a rate specified by manufacturer after field tests.
4. Apply at temperature and weather conditions recommended by the manufacturer or as written in this specification.
5. Follow manufacturer's recommendations concerning protection of glass, metal and other non-porous substrates. Contractor will be responsible for cleaning all surfaces which are contaminated by the water repellent.
6. Follow manufacturer's recommendation concerning protection of plants, grass and other vegetation. Contractor will be responsible for replacing all plants, grass or vegetation damaged by the water repellent.
7. Apply water repellent by brush only at locations where overspray would affect adjacent materials and where not applicable for spray application.
8. Start application at bottom of wall and work up surface with flood coat that has a six to eight inch rundown from the spray pattern.

3.03 CLEAN UP

A. On a daily basis, leave mixer, other tools and all materials in a manner so as to preclude any vandalism.

END OF SECTION 07 19 00

SECTION 07 22 16

ROOF INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flat and cricket insulation to be installed on Roof Sector in the project.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Rough Carpentry	Section 06 10 00
2.	Preparation for Reroofing	Section 07 01 50
3.	Modified Bitumen Roofing	Section 07 52 16
4.	Sheet Metal Flashing and Trim	Section 07 62 00

1.03 REFERENCES

A. Refer to the following references for specification compliance:

1. 2012 International Building Code with SC Modifications
2. 2009 International Energy Conservation Code
3. National Roofing Contractors Association – NRCA
4. FM Global
5. Underwriters Laboratories, Inc. – UL
6. ASHRAE Standard 90.1

1.04 DESCRIPTION

A. R Value

1. The minimum continuous “R-value” for the above deck insulation system shall be 20 and in accordance with the current Energy Conservation Code and ASHRAE 90.1.
2. R value to be based on Long-Term Thermal Resistance (LTTR) for polyisocyanurate insulation and manufacturer’s published data for all other insulation components, as tested in accordance with ASTM C177, C236, C518 or C976.

1.05 SUBMITTALS

A. Refer to Section 01 33 00-Submittal Procedures for requirements.

B. Manufacturer’s Product Data Sheets for all materials specified certifying material complies with all specified requirements.

C. Tapered insulation plan from material supplier with minimum R-value for each roof area.

D. Base sheet attachment plan from membrane manufacturer to meet the wind uplift requirements specified in 07 52 16.

E. Latest edition of the Manufacturer’s current material specifications and installation instructions.

1.06 QUALITY ASSURANCE

A. Insulation to be installed in accordance with their respective manufacturer's requirements.

B. Insulation(s) not bearing UL label at point of delivery shall be rejected.

C. Insulation damaged or wetted before, during, or after installation shall be removed from the job site no later than the next working day from the day such damage or moisture contamination is noted.

D. Wind Design: Install insulation system to meet the required wind uplift pressures as specified in Section 07 52 16-Modified Bitumen Roofing.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Material shall be delivered in the manufacturer's original sealed and labeled shrouds and in quantities to allow continuity application.

B. Storage: Materials shall be stored out of direct exposure to the elements on pallets or dunnage at least 4 inches above ground level at site location acceptable to Owner.

1. Utilize tarps that will completely cover materials to prevent moisture contamination. Remove or slit factory shrouds and/or visqueen; do not use these materials as tarps.
2. Install vapor retarders under material storage areas located on the ground.
3. Remove damaged or deteriorated materials from the job site.

C. Handling: Material shall be handled in such a manner to preclude damage and contamination with moisture or foreign matter.

1.08 PROJECT CONDITIONS

A. Insulation shall not be applied during precipitation. Contractor assumes all responsibility for starting installation in the event there is a probability of precipitation occurring during application.

B. Contractor will take necessary action to restrict dust, asphalt, and debris from entering the structure.

C. No more roofing will be removed than can be replaced with insulation, membrane and base flashings in the same day to create a watertight installation.

1.09 OVERVIEW

A. Sectors A and E

1. New base sheet mechanically attached to existing lightweight concrete.
2. New base layer polyisocyanurate insulation, 2.6 inch minimum thickness, adhered to new base sheet.
3. New gypsum overlayment, 1/4-inch minimum thickness, adhered to new base layer insulation.

B. Sectors B and D

1. New base sheet mechanically attached to existing lightweight concrete.
2. New base layer polyisocyanurate insulation, 2 inch minimum thickness, adhered to new base sheet.
3. New second layer polyisocyanurate insulation, 1 inch minimum thickness, adhered to new base layer insulation.
4. New gypsum overlayment, 1/4-inch minimum thickness, adhered to new base layer insulation.

C. Sector C

1. New base sheet mechanically attached to existing lightweight insulating concrete.
2. New base layer polyisocyanurate insulation, 2 inch minimum thickness, adhered to new base sheet.
3. New overlayment insulation, 1/4-inch minimum thickness, adhered to new base layer insulation.

D. Sector F

1. New base layer polyisocyanurate insulation, 2.5 inch minimum thickness, loose laid over existing wood deck.
2. New second layer polyisocyanurate insulation, 1 inch minimum thickness, mechanically attached over new base layer insulation to existing wood deck.
3. New overlayment insulation, 1/4-inch minimum thickness, adhered to new second layer insulation.

E. Sector G

1. New base layer polyisocyanurate insulation, 2.5 inch minimum thickness, adhered to existing structural concrete deck.
2. New tapered polyisocyanurate insulation, 1 inch minimum thickness, adhered to new base layer insulation.
3. New overlayment insulation, 1/4-inch minimum thickness, adhered to new base layer insulation.

PART 2 PRODUCTS

2.01 MATERIALS

A. Insulation Boards:

1. Roof Insulation:

a. Shall be rigid polyisocyanurate roof insulation board with factory applied glass fiber reinforced cellulosic felt facers on the top and bottom. Boards to comply with ASTM C1289 Type II, Class 1, Grade 2 and meet the following requirements:
b. Curing time shall be 24 hours minimum, plus an additional 24 hours minimum per inch thickness, at a minimum of 60 degrees F before shipment from the manufacturer.
c. Dimensional stability shall be 2 percent maximum linear change when conditioned at 158 degrees F and 97 percent relative humidity for seven days.

d. Maximum permissible insulation board size for mechanical attachment is 4 foot by 8 foot and for foam adhesive attachment is 4 foot by 4 foot. Field cutting of larger boards is not acceptable.

2. Tapered Insulation System:

a. Shall be rigid polyisocyanurate roof insulation board with factory applied glass fiber reinforced cellulosic felt facers on the top and bottom. Boards to comply with ASTM C1289 Type II, Class 1, Grade 2 and meet the following requirements:
b. Curing time shall be 24 hours minimum, plus an additional 24 hours minimum per inch thickness, at a minimum of 60 degrees F before shipment from the manufacturer.
c. Dimensional stability shall be 2 percent maximum linear change when conditioned at 158 degrees F and 97 percent relative humidity for seven days.
d. Board size shall be 4 foot by 4 foot.
e. Crickets and Saddles: Shall be rigid polyisocyanurate meeting the above requirements with a board size of 4 foot by 4 foot and slope shall be two times the slope of the respective roof area.

3. Gypsum Overlayment:

a. Shall be nonstructural, glass mat faced gypsum panel with 500 psi moisture resistant treated core, non-asphaltic primer surfacing, and tested in accordance with ASTM E 84 and ASTM E 136.
b. Board Size shall be 4 feet by 4 feet and minimum thickness shall be as indicated in 1.09 – Overview of this Section.
c. Acceptable manufacturers:

i. GP Gypsum DensDeck
ii. USG Securock
iii. Engineers accepted equivalent

B. Insulation Accessories

1. Base Sheet: Shall be fiberglass reinforced, asphalt coated base sheet meeting ASTM D 4601, Type II as approved by the roof system manufacturer.

a. Base Sheet Fasteners

i. Lightweight Concrete Substrate: Shall be G-90 galvanized steel one piece unit with minimum 2.7 inch diameter plate and minimum 1.2 inch length, such as ES Products ES-75, Olympic 1.2 Base Sheet Fastener, ITW Buildex 1.2 inch LWC or Siplast NVS Fasteners. Fastener must be approved by the base sheet manufacturer for use in lightweight insulating concrete and inclusive with warranty.

2. Asphalt impregnated wood fiber tapered edge strips to be the sizes detailed or required by field conditions meeting ASTM C 208.

a. Tapered Edge Strips

i. Use 1-1/2 inch by 24 inch tapered edge strips to form crickets in front of curbs wider than 12 inches, to provide slope transition at the outside of drainage sumps and to provide slope away from Sector C raised edge.
ii. Use 1/2-inch by 6 inch tapered edge strips in front of tapered insulation crickets to provide smooth transition and to provide slope away from Sector E roof edge.

C. Insulation Attachment Materials:

1. Foam Adhesive: Shall be a one or two part, VOC compliant, moisture-cured polyurethane foamable adhesive designed as roof insulation adhesive and approved by insulation manufacturer.
2. Shall be corrosion resistant 3 inch galvalume stress plate and corrosion resistant screw type fasteners for use with steel and wood decks; approved by the insulation manufacturer for the insulation type, thickness and board size specified; fastener length as required by the fastener manufacturer for the insulation thickness specified, and to penetrate the deck a minimum of 3/4 inch and a maximum of 1 inch.

a. Fastener length:

i. Shall be as required by the fastener manufacturer for the insulation thickness specified.
ii. Shall be as required to penetrate steel deck a minimum of 3/4-inch and a maximum of 1 inch.
iii. Shall be as required to penetrate underside of wood deck a minimum of 1 inch and maximum of 1-1/4 inch.

PART 3 EXECUTION

3.01 EXAMINATION

A. General

1. Contractor to inspect substrate for soundness and notify Engineer in writing of any deficiencies.

a. Commencement of work signifies Contractor's acceptance of substrate. Any defects in roofing work resulting from such accepted substrates shall be corrected to Owner's satisfaction at no additional expense.

3.02 PREPARATION

A. General

1. Roof deck to be dry and broomed clean of debris and foreign matter prior to installation of insulation system.
2. Refer to Section 07 01 50 for preparatory work prior to new roof system installation.

3.03 APPLICATION

A. General

1. Application shall be in accordance with the insulation/membrane manufacturer's instructions and these specifications.
2. All insulation to be in full sheets, carefully fitted and pushed against adjoining sheets to form tight joints. Gaps exceeding 1/4 inch will not be accepted.

    a. Provide spacing between gypsum overlayment boards as required by board manufacturer to accommodate thermal expansion and prevent buckling of board.

3. Insulation and overlayment boards that must be cut to fit shall be saw cut or knife-cut in a straight line, not broken. Chalk lines shall be used to cut insulation. Uneven or broken edges are not acceptable.
4. Remove insulation dust and debris that develops during insulation cutting operations.
5. Joints between successive and adjacent layers of insulation to be offset a minimum of 6 inches.
6. Stagger joints of gypsum overlayment 1 foot (vertically and laterally) to ensure that joints do not coincide with joints from the previous or adjacent layer.
7. For torch application, continue overlayment over combustible substrates.
8. Crickets, saddles and tapered edge strips shall be installed before the overlayment or coverboard insulation.
9. Adhere tapered edge strips at transitions, terminations and/or penetrations as detailed or required in ribbons of foam adhesive to ensure smooth transitions are provided for the roof membrane and flashings.
10. Provide necessary modifications to insulation system or nailers at roof edges as required to ensure a flush and smooth transition is provided for the roof membrane and flashing.
11. Field modifications of insulation, tapered insulation and tapered edge strips shall be made by the Contractor where required to accommodate roof and flashing conditions, prevent water dams and ponding water. Ponding water at scuppers and cricket valleys shall not be accepted.
12. Provide necessary modifications to prevent standing water which is defined as 1/4-inch of water in a 4 square foot or larger area 24 hours or more after precipitation.

B. Tapered Insulation

1. Install tapered insulation system to provide positive slope for complete roof drainage.
2. Crickets shall be sized as shown in the Contract Drawings. Modifications shall be provided to ensure positive slope and prevent standing water along the cricket valley.

    a. Minimum length to width ratio shall be 2:1. Fabricate partial crickets with dimensions which would result in a minimum length to width ratio of 2:1 if they were extended to full size.
    b. Unless otherwise noted, fabricate all crickets from tapered stock as required to provide the specified minimum slope. For example, when roof slope is indicated as 1/4-inch per foot minimum, fabricate crickets with slope of 1/2-inch per foot minimum.
    c. Construct crickets on up slope side of all curbs to ensure positive drainage.
    d. Install tapered edge strips at cricket edges to provide a smooth transition between the cricket and insulation system below.

3. Insulation boards may require mechanical fasteners and stress plates at slope transition of crickets to minimize bridging.

C. Roof Drainage:

1. Drainage sumps shall be installed as detailed.
2. The Contractor shall be responsible for carefully laying out the tapered insulation, sumps, drain bowls and scuppers to ensure the finished roof provides complete drainage with no standing water.
3. Contractor shall fabricate miter-cut sumps at scuppers to provide smooth transitions between the insulation system and the drains/scuppers.
4. Sumps shall ensure complete roof drainage and prevent water dams.
5. Contractor shall adjust insulation, drains and scuppers to ensure complete roof drainage and satisfactory substrates for membrane and flashings.
6. Drain sump components shall be fastened to the deck using specified insulation fasteners or adhesives.
7. Circular sumps and sumps that do not provide smooth transition or that create standing water at the drains shall be rejected and shall require removal and replacement.

D. Base Sheet Mechanical Attachment

1. Mechanically attach base sheet to the prepared substrate in accordance with the base sheet fastening pattern shown in contract drawings. If additional fastening is required by the manufacturer, the manufacturer's requirements shall be utilized. Starting at the low point of the roof, apply base sheet in a shingle fashion with minimum 6 inch end laps and 3 inch side laps. Apply asphalt primer to head and plates of fasteners.

E. Insulation Mechanical Attachment

1. Minimum fastener quantity and spacing shall be as indicated in the Contract Drawings.
2. Fastener quantity and spacing shall be as required by the membrane manufacturer to meet the wind uplift requirements specified.
3. Fasteners shall be installed using manufacturer's recommended equipment and in accordance with the manufacturer's requirements.
4. Fasteners and stress plates shall be set secure and tight against the insulation surface, and shall not be over-driven.
5. Fasteners shall engage the top flange of steel decks only.

F. Foam Adhesive Application

1. The minimum product temperature before application should be 72 degrees Fahrenheit. The minimum ambient and surface temperatures should be 40 degrees Fahrenheit and rising.
2. Adhesive beads shall be positioned and spaced at a minimum as indicated in the Contract Drawings. Comply with the requirements of the membrane manufacturer's tested assembly for adhesive spacing and positioning.
3. Adhesive beads shall be sized in accordance with the adhesive manufacturer's guidelines.
4. Insulation boards shall be placed onto the beads and immediately "walked" and/or "weighted" into place. Insulation boards must be placed into the adhesive in strict accordance with the adhesive manufacturer's guidelines.

5. Ensure full adhesion of all layers of insulation and take whatever steps necessary to achieve full adhesion, including but not limited to temporary ballasting of insulation until adhesive sets.

END OF SECTION 07 22 16

SECTION 07 52 16

MODIFIED BITUMEN ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Furnish and install an SBS modified bituminous membrane system consisting of two plies of asphalt elastomeric membrane reinforced with polyester and/or fiberglass mat.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Rough Carpentry	Section 06 10 00
2.	Preparation for Reroofing	Section 07 01 50
3.	Fluid Applied Water Repellent	Section 07 19 00
4.	Roof Insulation	Section 07 22 16
5.	Sheet Metal Flashing and Trim	Section 07 62 00
6.	Through Wall Flashing	Section 07 65 00
7.	Roof Accessories	Section 07 72 00
8.	Facility Lightning Protection	Section 26 41 00

1.03 REFERENCES

A. Refer to the following references, current edition for specification compliance:

1. 2012 International Building Code with SC Modifications
2. 2012 International Fire Code with SC Modifications
3. National Roofing Contractors Association – NRCA
    a. NRCA Roofing and Waterproofing Manual
4. American Society of Testing Materials (ASTM)
    a. ASTM D 41 Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
    b. ASTM E 108 Standard Test Methods for Fire Tests of Roof Coverings
    c. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction Materials.
    d. ASTM D 3019 Standard Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, Asbestos Fibered and Non Asbestos Fibered.
    e. ASTM D 3409 Standard Test Method for Adhesion of Asphalt-Roof Cement to Damp, Wet, or Underwater Surfaces.
    f. ASTM D 4479 Standard Specification for Asphalt Roof Coatings – Asbestos Free.
    g. ASTM D 4586 Specification for Asphalt Roofing Cement, Asbestos Free.
    h. ASTM D 6162 Specification for SBS Modified Bitumen Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
    i. ASTM D 6163 Specification for SBS Modified Bitumen Sheet Materials

Using Glass Fiber Reinforcements.

j. ASTM D 6164 Specification for SBS Modified Bitumen Sheet Materials Using Polyester Reinforcements.

5. Asphalt Roofing Manufacturers Association – ARMA
6. FM Global

   a. FM 4450 – Approval Standard for Class 1 Insulated Steel Deck Roofs
   b. FM 4470 – Approval Standard for Class 1 Roof Coverings

7. Underwriters Laboratories, Inc. – UL

   a. UL 580 – Test for Uplift Resistance of Roof Assemblies
   b. UL 790 – Tests for Fire Resistance of Roof Covering Materials
   c. UL 1897 – Uplift Resistance for Roof Covering Systems

1.04 SUBMITTALS

A. Refer to Section 01 33 00-Submittal Procedures for Submittals.

B. Latest edition of the Manufacturer's current material specifications and installation instructions.

C. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.

D. Certified Roofing Torch Applicator (CERTA) credentials from NRCA.

1.05 QUALITY ASSURANCE

A. Roofing applicator shall be approved by the material manufacturer. Additionally, roofing applicator shall have the experience of five similar roof projects. Verification shall be provided to the Engineer upon request.

B. Roofing Contractor shall schedule the membrane manufacturer's technical representative to be present for the pre-construction meeting and to inspect work completed once every other week or as otherwise requested throughout the project and upon substantial completion. Manufacturer to generate reports from these site inspections and supply Engineer copy of same within one week of inspection.

C. Install roofing system to meet UL 790 Class A/ASTM E 108 Class A Fire Rating.

1. Install roofing system to meet or exceed the requirements of the current adopted version of ASCE-7, and shall be an approved assembly tested to the ultimate wind uplift pressures listed below:

   a. Field of Roof: - 29.9 psf.
   b. Perimeter of Roof: - 50.2 psf.
   c. Corner of Roof: - 75.5 psf.

D. Manufacturer shall have been producing SBS products in the United States for a minimum of ten years. The primary roofing products shall have maintained a consistent composition for a minimum of five years without a change in the basic product design or SBS modified bitumen blend (e.g. no substantive changes in product composition, polymer specification, asphalt or filler formulation).

E. The base ply and flashing reinforcing ply shall be fully inspected by the Contractor and Manufacturer's technical representative, and repaired and prepared to meet the Manufacturer's requirements prior to installing the surface ply.

F. The base ply shall not be exposed for longer than the Manufacturer's maximum requirement for exposure and shall be acceptable for surface ply applications. Any base ply exposed longer than the maximum requirement will be subject to rejection or additional remedial requirements prior to application of the surface ply.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery: Materials shall be delivered in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.

B. Storage: Store materials out of direct exposure to the elements. Store roll goods on a clean, flat and dry surface. All material stored on the deck overnight shall be stored on pallets. Rolls must be stored on ends. Store materials in a manner so as to preclude overloading of deck and building structure. Store materials such as solvents, adhesives and asphalt cutback products away from open flames, sparks or excessive heat. Remove or slit factory shrouds and/or visqueen; do not use these materials as tarps. Cover all material using a breathable cover such as a canvas. Polyethylene or other non-breathable plastic coverings are not acceptable.

C. Handling. Material shall be handled in such manner as to preclude damage and contamination with moisture or foreign matter.

D. Damaged Material: Any materials that are found to be damaged or stored in any manner other than that stated above will be automatically rejected, removed, and replaced at the Contractor's expense.

1.07 PROJECT CONDITIONS

A. Environmental Requirements

1. Roofing shall not be applied during precipitation and shall not be started in the event there is a probability of precipitation during applications.
2. The membrane shall not be applied at or below the dew point temperature.
3. When conditions are damp and where adjacent roof areas have moisture or dew, the roof shall be fully dried to prevent tracking water over the membrane substrates.
4. At ambient temperatures of 40 degrees Fahrenheit and below, including wind chill, take all precautions to ensure all adhesives and other materials maintain the minimum acceptable temperature at the point of roofing application as recommended by the membrane manufacturer.

B. Protection

1. Protect against staining and mechanical damage of adjacent surfaces and work areas during application. Staining, mechanical damage, or discoloration of the membrane shall be cause for rejection.
2. Post a fire watch on site for a minimum of sixty minutes subsequent to the completion of any open flame activities. Sufficient number of fire extinguishers to handle any contingency which might develop is to be on the roof at all times.

The roofing applicators shall be trained in the proper use of fire extinguishers. Extinguish torches when not in use.

3. Prevent smoke and other fumes from entering facility by coordinating with Facility representative and by temporary intake shut down and/or covering intake.
4. Protect materials being installed and stored materials against wind related damage.

1.08 TORCH OPERATION AND SAFETY

A. Refer to Section 01 11 00-Summary of Work for torch operation and safety.

B. Refer to Section 01 11 00-Summary of Work for hot work permits.

C. The Contractor shall coordinate work around HVAC, fans, vents, etc. with the Owner in advance of work to ensure flames or smoke will not be pulled into the building or equipment. The Contractor shall coordinate the work and work schedule with the Owner to ensure conditions are satisfactory to proceed with work around the equipment.

D. When and where required by the Owner, a full-time hot work monitor shall be employed by the Contractor to monitor interior and interstitial spaces during periods when hot work operations are conducted on the roof. The Contractor shall gain access to the space between the roof and ceiling to monitor conditions during and after Hot Work.

E. The Contractor shall be responsible for hot work safety for their employees and their sub contractors.

F. Contractor shall take all necessary measures to prevent fire exposure at roof tie-ins between new and existing roofing, at wood curbs, wood nailers, wood stud wall and rooftop equipment. All necessary materials and methods shall be provided by the Contractor to prevent fire at these locations.

1.09 WARRANTY

A. Manufacturer’s Guarantee: Manufacturer’s standard form, non pro-rated, without monetary limitation or deductibles, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks or breaches in the primary roof membrane causing moisture to enter the substrate below (even if visible leaks are not observed inside the facility). Warranty to remain in effect for wind speeds up to 72 mph. Warranties requiring the Owner’s signature will not be acceptable.

1. Warranty to include but not be limited to membrane, flashings, insulation, mastics, adhesives, fasteners, sealants, sheet metal flashings, fluid applied flashing, aluminum clad flashing, etc.
2. Warranty Period: Twenty years from date of Substantial Completion
3. Manufacturer's Representative shall attend a post-construction field inspection no earlier than twenty- three months, and no later than twenty-four months after the Date of Substantial Completion. Submit a written report within seven days of this visit to the Engineer listing observations, conditions and any recommended repairs or remedial action.

B. Roof System Installer’s Two Year Warranty: Contractor’s two year warranty on their company letterhead using sample contained in Section 01 77 00-Closeout Procedures.

1. Contractor will be required to attend a Post-Construction field inspection no earlier than twenty- three months and no later than twenty-four months after the Date of Substantial Completion and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements herein, the following manufacturers are approved:

1. Firestone Building Products
2. Johns Manville (JM)
3. Siplast
4. Soprema, Inc
5. Garland

2.02 MEMBRANE MATERIALS

A. Roof Membrane Assembly:

1. A dimensionally stable roof membrane assembly consisting of two plies of a prefabricated, reinforced, homogeneous Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane secured to a prepared substrate. Both reinforcement mats shall be impregnated and coated each side with a high quality SBS modified bitumen blend.
2. The roof system shall pass ASTM D 5849, Resistance to Cyclic Joint Displacement at 14°F. Passing results shall show no signs of membrane cracking or interply delamination after 500 cycles as manufactured and 200 cycles after heat conditioning according to ASTM D 5147.
3. Base Ply Membrane (Torch Applied): Glass fiber and/or polyester reinforced ply sheet manufactured for torch application, meeting or exceeding requirements of ASTM D 6163 or D 6164, Type I or II, Grade S. Approved Products:

    a. Firestone SBS Glass Torch Base
    b. JM Dynaweld Base
    c. Siplast Paradiene 20 TG
    d. Soprema Elastophene Flam
    e. Garland HPR Torch Base

4. Surface Ply Membrane: Glass fiber and/or polyester reinforced, fire retardant ply sheet, meeting or exceeding requirements of ASTM D 6163, D6164 or D6222, Type I or II, Grade G. Granules to be white.

    a. Firestone Premium FR Torch torch applied.
    b. JM Dynaweld Cap FR torch applied.
    c. Siplast Paradiene 30 FR TG torch applied.
    d. Soprema Elastophene Flam FR GR torch applied.
    e. Garland Stressply Plus FR Mineral cold adhesive applied.

B. Flashing shall consist of:

1. Reinforcing/Stripping Ply (Torch Application):

a. Firestone SBS Poly Torch Base
b. JM Dynaweld HW
c. Siplast Paradiene 20 TG
d. Soprema Sopralene Flam 180
e. Garland HPR Torch Base

2. Flashing/Target Ply (Torch Application):

a. Firestone SBS Metal Flash-AL
b. JM Dynaclad
c. Siplast Veral Aluminum
d. Soprema Sopralast 50 TV Alu
e. Garland Stressply IV Plus UV Mineral

C. Fluid Applied Flashing System: Shall be membrane manufacturer's polyurethane or PMMA based resin with polyester fleece flashing system. Approved Products:

1. Firestone Ultraflash Liquid Flashing
2. JM Permaflash
3. Siplast Parapro
4. Soprema Alsan RS
5. Garland Tuff Flash

2.03 RELATED MATERIALS

A. Cold Adhesive: Membrane manufacturer's zero VOC adhesive, specifically used for adhering membrane plies. Approved products:

1. Garland Green-Lock Membrane Adhesive

B. Ceramic granules: Shall be of color scheme and type matching the granule surfacing of the cap sheet.

C. Asphalt primer: Shall meet ASTM D-41 requirements and be approved for intended use by membrane manufacturer.

D. Flashing Cement: An asphalt cutback general utility mastic, reinforced with non-asbestos fibers, enhanced slump resistance, used for all flashing and vertical applications and as a base for setting metal flanges and temporary seals, conforming to ASTM D 4586 Type II requirements. Approved Products:

1. Firestone Multi-Purpose MB Flashing Cement
2. JM MBR Flashing Cement
3. Siplast PA 828
4. Soprema Trowel Grade Flashing Adhesive (VOC)
5. Garland Green-Lock Flashing Adhesive

E. Solvent Free Adhesive: A single component, solvent-free modified asphalt adhesive designed for application of the specified roof membrane in areas below the fluid applied flashing.

F. Termination Bar: Refer to Section 07 62 00-Sheet Metal Flashing and Trim.

G. Metallic Powder: A finely graded metal dust as supplied or approved by the membrane manufacturer, used for covering bitumen overruns over the foil surfaced materials.

H. Walk Pad Material: Shall be a prefabricated (by the membrane manufacturer), puncture resistant polyester core reinforced, polymer modified bitumen sheet material topped with a ceramic granule wearing surface. Color shall differ from color of Surface Ply Membrane for all Manufacturers and shall be selected by the Owner. Approved Products:

1. Firestone X-Tred Walkway Pad
2. Johns Manville Dynatred Plus
3. Siplast Paratread
4. Soprema Soprawalk
5. Garland approved walk pad meeting the above requirements.

2.04 FASTENERS

A. Base Flashing Fasteners at Concrete/Masonry: Shall be 1/4-inch diameter metal based expansion anchor for use in concrete or masonry substrates with length to penetrate substrate a minimum of 1-1/2 inch.

B. Base Flashing Fasteners at Wood: Shall be galvanized ring shank nail with one inch diameter cap, such as Regular Round Head Fasteners as manufactured by Simplex Nails. Fastener length shall be one inch minimum and must be approved by the membrane manufacturer for inclusion in warranty.

PART 3 EXECUTION

3.01 INSPECTION

A. A pre-job conference including the Engineer, Contractor, and the membrane manufacturer's representative shall be conducted prior to the application of the roofing.

B. Contractor shall verify that work penetrating the roof deck or work which may otherwise affect the roofing has been properly completed.

C. Contractor shall inspect insulation system substrate prior to application of membrane. Commencement of work signifies Contractor's acceptance of substrate. Any defects in roofing work resulting from such accepted substrates shall be corrected to Owner's satisfaction at no additional expense.

D. Contractor shall evaluate rigid plastic flashing substrates for compatibility with PMMA resin materials.

3.02 PREPARATION

A. General. All surfaces shall be swept or vacuumed prior to commencement of roofing.

B. Contractor shall coordinate closure of air intakes prior to application of primer, application of fluid applied flashing and heat welding applications.

C. All SBS membranes shall be unrolled and allowed to relax in accordance with membrane manufacturer's recommendations or a minimum of thirty minutes, whichever is greater.

D. Where walls, curbs, expansion joints, etc. present an unacceptable substrate for flashing and where flashings substrates are combustible, a layer of non-combustible overlayment insulation shall be fastened to provide a suitable substrate for flashing.

E. Lightly abrade rigid plastic flashing substrate surface to receive PMMA flashing system. Clean rigid plastic substrates using PMMA manufacturer's recommended cleaner/solvent and allow to dry. Extend the preparation area a minimum of 1/2-inch beyond the termination of the flashing system.

3.03 APPLICATION

A. General:

1. Apply roofing in accordance with roofing system manufacturer's instructions and the following requirements. Application of the roofing membrane base ply shall immediately follow application of base sheet/insulation system as a continuous operation.
2. Aesthetic Considerations: An aesthetically pleasing overall appearance of the finished roof application is a standard requirement for this project. Make necessary preparations, utilize recommended application techniques, apply the specified materials (i.e. granules, etc.), and exercise care in ensuring that the finished application is acceptable to the Owner. Excessive footprints or impressions in the surface ply will be grounds for rejection thereby requiring complete membrane tear-off and replacement.
3. Priming:

    a. Prime metal flanges, concrete and masonry surfaces with a uniform coating of asphalt primer.
    b. Prime gypsum board overlayment prior to installing the specified base ply membrane.
    c. Primer shall provide full coverage to ensure surfaces are dark brown to black. No less than 2 to 2-1/2 gallons per square will be accepted.
    d. Allow primer to fully dry prior to application of asphalt/adhesive.

4. Inspection membrane and flashing application each day. Repair all deficiencies daily prior to beginning or resuming other work.

    a. Membrane deficiencies shall be cut open and removed as necessary.
    b. Repairs shall extend from lap to lap.

B. Roof Membrane:

1. Apply membrane in accordance with the manufacturer's instructions and the following requirements.
2. Apply all layers of roofing free of wrinkles, creases or fishmouths.
3. Exert sufficient pressure by use of roller or broom on the roll during application to ensure prevention of air pockets.
4. Stagger the lap seams between the base ply layer and the finish ply layer. Use half width base ply as a starter strip.
5. Apply all layers of roofing perpendicular to the slope of the deck.
6. Fully bond the base ply to the prepared substrate, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the torch applicator. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply

top pressure to top seal T-laps immediately following sheet application. Stagger end laps a minimum of 3 feet.

7. All base ply laps shall be hot air welded. Monitor hot air welding of laps to ensure the entire lap is sealed and no air pockets are present.
8. Excess bleed out at laps and repairs shall not occur and cause “dams” or ridges that will inhibit full adhesion of the surface ply.
9. Immediately after base ply installation, install lead flashings at roof drains. Refer to Section 07 62 00-Sheet Metal Flashing and Trim.
10. Strip drain lead with one ply of base ply material in accordance with membrane manufacturer’s latest printed instructions. Extend ply a minimum of 12 inches beyond lead. All cuts and terminations are to be neat and square. Membrane seams shall not intersect drain clamping ring.
11. Fully bond the surface ply to the base ply, utilizing minimum 3 inch side and end laps. Stagger end laps of the surface ply a minimum 3 feet. Apply each sheet directly behind the cold adhesive or torch applicator. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger side laps of the surface ply a minimum 12 inches from side laps in the underlying base ply. Stagger end laps of the surface ply a minimum 3 feet from end laps in the underlying base ply.
12. Fully torch-bond a sacrificial ply of target ply flashing around all drains as indicated in the Contract Drawings and in accordance with membrane manufacturer’s latest printed instructions. Extend ply a minimum of 3 feet from outside edge of drain clamping ring.

    a. Do not locate surface or target ply laps through drain clamping rings.
    b. All cuts and terminations are to be neat and square.

C. Torch Application:

1. Utilize heat welders experienced in torch application.
2. Warm the surface to which the membrane is being applied, preheat portions of the roll which are about to be applied and melt the modified asphalt on the back of the sheet which will be used to adhere the membrane. The area of the roll where the modified asphalt is being melted is the most critical. Roll must be heated evenly across the entire width of the sheet being heat welded.
3. Ensure a small bead of asphalt precedes the roll as it is laid down. Bead of asphalt shall be visible to the applicator and should flow out on both sides of the sheet.

D. Cold Adhesive Application:

1. Application shall meet the membrane manufacturer’s published instructions.
2. Membrane adhesive shall be applied by 3/8” notched soft rubber squeegee.
3. Apply cold adhesive in a smooth, even, continuous layer without breaks or voids.
4. Utilize an application rate of 2 to 2 1/2 gal/sq (0.6 to 1.0 l/m²) over irregular or porous substrates. Utilize an application rate of 1 1/2 to 2 gal/sq (0.6 to 0.8 kg/m²) for interply applications. Double the adhesive application rate at the end laps of granule surfaced sheets. Contractor shall be responsible for varying application rates based on conditions present.
5. Contractor shall inspect and change squeegee blades daily. Squeegee blades shall be replaced more frequently as the notches are worn down less than 3/8”.
6. Apply cold adhesives between ambient temperatures of approximately 40°F to 100°F.

7. Minimize foot traffic in areas where adhesive has been installed

E. Granule Embedment: Embed granules at all locations where membrane material will be installed over a granulated surface and a selvage edge is not present. Using a torch or embedment tool, heat the area and push the granules down into the heated bitumen. Do not scrape or remove the granules from the surface.

F. Metallic Powder Embedment: Dress asphalt bleed-out at aluminum clad areas with manufacturer's aluminum fibered roof coating after bleed-out has cooled.

G. Water cut-off: At end of day's work, or when precipitation is imminent, construct a water cut-off at all open edge. Cut-offs can be built using asphalt or plastic cement and roofing felts, constructed to withstand protracted periods of service. Cut-offs must be completely removed prior to the resumption of roofing.

H. Flashings: Shall be installed concurrently with the membrane installation.

1. Prior to installing flashings over plywood substrates, install a layer of rosin paper and base sheet. Secure materials to plywood with approved fasteners at 6 inches on center staggered in all directions.
2. Base flashing shall be accomplished using a reinforcing ply and flashing ply. The reinforcing sheet shall be lapped a minimum of 3 inches to itself and shall extend a minimum of 4 inches onto the base ply surface from the top of the gypsum board overlayment and a minimum of 3 inches up the vertical termination. The flashing sheet shall be lapped a minimum of 3 inches to itself and shall extend a minimum of 6 inches onto the surface ply surface and a minimum of 3 inches up the vertical termination or as indicated in the Contract Drawings. Lap seams in the reinforcing layer shall never coincide with the laps of the flashing layer. The reinforcing sheet and flashing sheet shall be adhered by heat application (in accordance with the manufacturer’s guidelines). All flashing sheets shall be cut off the end of the roll and be applied vertically, always working to a selvage edge.
3. Base flashing shall be mechanically terminated a minimum of 8 inches above the finished roof surface or as indicated on Contract Drawings.

    a. Concrete/Masonry Substrate: Base flashing shall be mechanically terminated using approved fasteners and termination bar.
    b. Wood Substrate: Base flashing shall be mechanically terminated using approved fasteners, spaced as indicated on Contract Drawings. Fastener heads shall be covered with a three-course roof cement and fabric.

4. Flashing/ Target Ply:

    a. Exert pressure on the flashing sheet during application to ensure complete contact with the substrate, preventing air pockets, utilizing a damp sponge or shop rag.
    b. Where aluminum clad flashing will be lapped over adjacent aluminum clad flashing, remove the aluminum clad surface.

5. Base flashing shall be terminated at all roof edges by extending the base flashing at least two inches beyond the edge of the roof and mechanically attaching a termination bar vertically with appropriate fasteners eight inches on center. Provide a continuous bead of sealant along outside edge of termination bar.

6. Sheet metal incorporated into the roofing system shall be sealed off with stripping ply. Stripping plies shall be installed in roof cement and fit tight to the edge of the sheet metal. The stripping ply shall extend 4 inches beyond sheet metal onto roof membrane. Stripping ply shall be installed prior to application of surface ply.
7. Provide sealant installed to fill void between edge of sheet metal and surface ply edge (i.e. at metal edge, pipe penetrations, etc.) properly tooled to ensure adhesion and slope to shed water. Broadcast granules into properly installed sealant.

I. Fluid Applied Flashing Application

1. Using masking tape, mask the perimeter of the area to receive the flashing system. Apply resin primer to substrates requiring additional preparation and allow primer to set.
2. Pre-cut fleece to ensure a proper fit at transitions and corners prior to membrane application.
3. Refer to manufacturer's installation instructions for application rates and additional installation information.
4. Broadcast adhesive and bitumen overrun treatment product into horizontal surface of fluid to match adjacent surface ply.

J. Walk Pad Material

1. Apply walk pad material to a clean, dry surface.
2. Prior to application, cut walk pad material into maximum 5 foot lengths and allow to relax until flat. A straight edge or chalk line should be used to ensure straight square cuts. Do not cut the walk pad material directly on the roof surface.
3. Position walk pad material so as to leave minimum 2 inch gaps between panels to allow for proper drainage.
4. Adhere walk pad panels to surface ply with roof cement applied to the back of the panels in spots approximately 5 inches square. Use a notched trowel to keep the cement 3/8 inch thick.
5. Walk-in each panel to ensure complete contact with the membrane surface.

K. Roof Drain

1. Provide roof drain flashings as indicated in detail drawing. Refer to the above requirements for fluid applied flashings.
2. Provide new cast iron strainer dome and clamping ring and provide new stainless steel clamping ring bolts. Refer to Section 07 01 50 for Roof Drain Component requirements.
3. Clamping rings shall be secured in place with all bolts at the end of each work day. Contractor shall water test roof drains after every instance the clamping ring is removed and reinstalled. The Contractor shall notify the Owner and Engineer of the water test schedule.

L. Ponding Water

1. The ponding of any water on the roof surface after installation of the roofing system is not acceptable and will be grounds for rejection of the roof. Ponding is herein defined as precipitation remaining in a four square foot area or larger, 1/4 inch or deeper for a period of 24 hours from the termination of precipitation.

Contractor shall not apply surface ply until verification of proper drainage has been determined. Contractor shall be responsible for modifications to roof system to ensure proper drainage including but not limited to reinstallation of roof system, installation of additional tapered insulation and/or installation of additional base plies.

3.04 CLEAN UP

A. Remove all debris and excess material from the roof area. Pick-up all loose fasteners and sheet metal scraps.

B. The Contractor shall clean off/remove excess adhesive, sealant, stains and residue on the membrane and flashing surfaces.

END OF SECTION 07 52 16

SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 WORK INCLUDED

A. Fabrication and installation of new sheet metal flashings and trim to provide a permanently watertight condition.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Rough Carpentry	Section 06 10 00
2.	Preparation for Reroofing	Section 07 01 50
3.	Fluid Applied Water Repellent	Section 07 19 00
4.	Roof Insulation	Section 07 22 16
5.	Modified Bitumen Roofing	Section 07 52 16
6.	Through Wall Flashing	Section 07 65 00
7.	Roof Accessories	Section 07 72 00
8.	Facility Lightning Protection	Section 26 41 00

1.03 REFERENCES

A. Refer to the following references for specification compliance:

1. 2012 International Building Code with SC Modifications
2. American Society for Testing and Materials (ASTM)
3. National Roofing Contractors Association (NRCA)
4. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
5. ANSI/SPRI ES-1

1.04 SUBMITTALS

A. Refer to Section 01 33 00-Product Submittals for Submittals.

B. Manufacturer’s Product Data Sheets for all materials specified certifying material complies with all specified requirements.

C. Pre-finished sheet metal and sealant color chart. Provide one set of original color chips.

D. Shop Drawings for any transitions and/or terminations not depicted in Contract Drawings. Provide shop drawings indicating material types, sizes, shapes, thicknesses, finishes, fabrication details, anchors, connections and relation to adjacent work. Draw details and profiles at appropriate scale.

1.05 QUALITY ASSURANCE

A. Installation shall comply with the Contract Drawings and current SMACNA Architectural Sheet Metal Manual.

B. Ensure work is free of leaks in all weather conditions.

C. Fabricate metal edge (where no gutter is present) and coping in accordance with ANSI/SPRI ES-1 requirements.

D. Workmanship shall be first-class in every respect. The sheet metal work shall be assembled and secured in accordance with these specifications, the manufacturer's requirements and referenced standards.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.

B. Storage: Store materials within areas designated or approved by the Owner. Ensure materials remain dry, covered and not in contact with the ground.

C. Handling: Handle material in such manner as to preclude damage and contamination with moisture or foreign matter.

1.07 PROJECT CONDITIONS

A. Environmental: Protect building and its components from the elements at all times during the project.

B. Coordination and Scheduling: Coordinate all phases of work to allow continuity of work without delays.

1.08 WARRANTY

A. Contractor to provide the pre-finished sheet metal manufacturer's thirty (30) year finish warranty from the date of substantial completion.

B. All products listed in Part 2 shall be included in the Modified Bitumen Membrane Roofing Manufacturer's warranty specified in Section 07 52 16.

C. Roof System Installer's Two Year Warranty: Contractor's two year warranty on their company letterhead using sample contained in Section 01 77 00-Closeout Procedures.

1. Contractor will be required to attend a Post-Construction field inspection no earlier than twenty- three months and no later than twenty-four months after the Date of Substantial Completion and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 PRE-FINISHED STEEL

A. ASTM A 653, AISI G90 zinc coated sheets, commercial steel, extra smooth, primed and finished on one side with Kynar/Hylar based fluoropolymer coating of 1.0 mil total dry film thickness, and on the reverse side, with a wash coat of 0.3 to 0.4 mil dry film thickness. A strippable plastic film should protect the finish during fabrication and installation. Manufacturer's standard color to be selected by Owner.

1. 24-gauge

    a. Counterflashing
    b. Edge Metal
    c. Edge Metal Extension
    d. Downspout and Outlet
    e. Duct Flashing
    f. Gutter
    g. Receiver
    h. Scupper Trim Plate
    i. Slip Flashing

2. 22-gauge

    a. Expansion Joint Cleat

2.02 GALVANIZED STEEL

A. ASTM, A 653, AISI G90 galvanized steel, mill finish.

1. 16 gauge

    a. Continuous Zee Channel

2. 22-gauge

    a. Continuous Cleat

2.03 GALVANIZED STEEL

A. ASTM, A 653, AISI G90 galvanized steel, mill finish.

1. 16 gauge

    a. Continuous Zee Channel

2. 22-gauge

    a. Continuous Cleat

3. Gutter Brackets: Prime and paint to match gutter, or clad in gutter material. If painting, form brackets prior to painting and paint prior to installation. Touch up paint after installation.

    a. 1/4-inch by 1-1/2 inch

4. Gutter Spacers: 1/16-inch by 1 inch
5. Downspout Hangers: Prime and paint to match downspout, or clad in downspout material. If painting, form hangers prior to painting and paint prior to installation. Touch up paint after installation.

    a. 1/16-inch by 1 inch

2.04 STAINLESS STEEL

A. 26-gauge, Type 304 as tested in accordance with ASTM A 167.

1. Closure Metal
2. Hood Flashing
3. Enclosure/Flange
4. Scupper Liner
5. Splash Pan
6. Threshold Cap and Flashing
7. Umbrella

2.05 COPPER

A. 16 ounce, soft rolled complying with ASTM B 370.

1. Ledge Cap
2. Cover Plate for Ledge Cap
3. Closure for Ledge Cap

2.06 LEAD

A. Four pound soft lead:

1. Roof Drain Flashing – utilize 30 inch by 30 inch sheet.
2. Lead Wedges at saw cut joints.

2.07 FASTENERS

A. Roofing Nails: 11 or 12-gauge double hot dipped galvanized or stainless steel ring shank roofing nails with diamond point, minimum 3/8-inch diameter head and 1-1/4 inch length.

B. Screws: #12 hot dipped galvanized or stainless steel hex or pan head screws with length to penetrate substrate a minimum of 1-1/2 inch.

C. Concrete and Masonry Anchors:

1. 1/4-inch diameter metal based expansion anchor with stainless steel pin of length to penetrate substrate a minimum of 1-1/2 inch.

2. Masonry screws, approved my membrane manufacturer, 1/4 inch minimum diameter, corrosion resistant, with Phillips flat head. Length to provide minimum 1-1/2 inch embedment into substrate.

D. Washers: Shall be stainless steel with neoprene gasket backing. Shall be 9/16-inch diameter for use with #12 screws and 5/8-inch diameter for use with 1/4-inch diameter concrete and masonry anchors.

E. Rivets: #44 stainless steel rivets with stainless steel mandrel. Length of rivet to properly fasten particular sheet metal components. Rivets shall be factory painted to match adjacent sheet metal.

2.08 RELATED MATERIALS

A. Sheet Metal Underlayment Membrane: 40-mil minimum thickness sheet; slip-resistant surfacing, polyethylene-film-reinforced top surface laminated to SBS-modified asphalt adhesive, with release paper backing; suitable for high temperature applications up to 250 degrees. Acceptable products include:

1. Mid-States Asphalt Quik-Stick HT
2. Grace Ice and Water Shield HT
3. Carlisle WIP 300 HT

B. High Temperature Sealant: One-component elastomeric gun grade silicone sealant conforming to ASTM C 920, Type S, Grade NS, Class 25, use NT, G, A, or O that maintains elastomeric properties up to 450 degrees Fahrenheit continuous. Color to match new watertight umbrella.

C. Polyurethane Sealant: One-component elastomeric gun grade polyurethane sealant conforming to ASTM C 920, Type S, Grade NS, Class 25, and use NT, M, A, G, or O as required by substrate conditions. Color to match adjacent materials.

D. Sealant Tape: Minimum 1/2-inch wide non-skinning butyl sealant tape.

E. SBS Mastic: Asbestos-free, VOC compliant, SBS modified asphalt mastic prepackaged in caulking tubes, such as 19 ULTRA as manufactured by Karnak Corporation, or as recommended by modified bitumen roofing manufacturer.

F. SBS Sealant: An SBS polymer modified asphaltic flashing cement in a 10.4 ounce cartridge conforming to ASTM 4586 requirements; approved by the roofing membrane manufacturer for use in conjunction with the roofing membrane materials.

G. Sealant Tape: Minimum 1/2-inch wide non-skinning butyl sealant tape.

H. Aluminum Tape: Pressure-sensitive, 2 inch wide aluminum tape used as a separation layer between small areas of asphalt contamination and the membrane and as bond breaker under the metal edge cover plates.

I. Tapered Edge Strip: Refer to Section 07 22 16.

J. Solder: 20-80 tin-lead alloy conforming to ASTM B32.

K. Flux: Muriatic acid killed with zinc or an accepted brand of commercial soldering flux designed for use with 20-80 solder.

L. Termination Bar: Extruded aluminum bar, 1-inch wide by 1/8-inch thick, with pre-punched holes at 8 inches on center.

M. PVC Flashing: 20 mil corrosion resistant, waterproof PVC flashing.

N. Compressible Batt Insulation: Un-faced friction-fit fiberglass building insulation, cut to fit from 3-1/2 inch by 15 inch by 48 inch batts.

O. Prefabricated Flexible Conduit Penetration Flashings: One-piece non insulated Aluminum Liquid Tight Flexible Conduit Flashings; MEF-2A standard 12” (305 mm) high flashing; 0.109” (2.7mm) mill finish 6061-T4 aluminum; to CSA B272-93; with EPDM End Cap as manufactured by Thaler Metal Industries Ltd. (www.thalermetal.com, or 800-576-1200) or Engineer accepted equivalent.

P. Mineral Wool: mineral-wool-type insulation resistant up to 2,000 degrees Fahrenheit. Thickness shall be 2 inch.

PART 3 EXECUTION

3.01 EXAMINATION

A. Coordinate with other work for correct sequencing of items which make up the entire system.

B. Ensure substrates are installed, secured and modified to accommodate sheet metal flashings.

C. Deficiencies associated with the sheet metal substrates shall be reported to Engineer before beginning sheet metal work. All such deficiencies shall be corrected before installing sheet metal flashings.

D. Contractor shall inspect pre-finished sheet metal components before installation. Materials with scratches through the paint finish shall be repaired or replaced as determined by the Engineer. Damaged and dented materials, and materials scratched through to the steel base material shall be removed from the project, not to be installed.

3.02 INSTALLATION

A. General:

1. All joints to be locked and sealed or soldered.
2. Provide for thermal movement (expansion and contraction) of all exposed sheet metal.
3. Where dissimilar metals contact, galvanic action shall be prevented by means of heavy coat of asphalt paint.
4. Prime all metal surfaces (top and bottom) to receive bituminous materials. Allow primer to dry thoroughly before application of bituminous materials.
5. All metal flanges shall be installed on top of membrane and adhered as indicated in detail drawings. Metal flanges connected to the roof shall be installed per membrane manufacturer's specifications and the requirements herein.
6. Various sheet metal sections shall be uniform with corners, joints and angles mitered, sealed and secured.
7. Exposed edges shall be returned (hemmed); both for strength and appearance, and sheet metal shall be fitted closely and neatly.
8. Provide cleats or stiffeners and other reinforcements to make all sections rigid and substantial.
9. Sheet metal shall be fabricated, supported, cleated, fastened and joined to prevent warping, "oil canning", and buckling.
10. All sheet metal details shall provide for redundancy including but not limited to sheet metal underlayment and/or sealants. This secondary protection shall be installed, sealed and lapped to ensure a redundant layer of protection will shed moisture infiltration if the sheet metal fails.

B. Fasteners:

1. Shall be size and type required.
2. All fasteners to be rust resistant and compatible with materials to be joined.

3. All exposed fasteners shall be stainless steel screws with washers fastened through 5/16-inch predrilled oversized holes.
4. All exposed fasteners into concrete or masonry shall be metal based expansion anchor with stainless steel pin with washers fastened through 11/32 inch predrilled oversized holes.
5. All exposed fasteners shall have factory painted heads to match the sheet metal color.
6. Exposed horizontal surface fasteners are not acceptable.

C. Counterflashing:

1. Fabricate counterflashing as shown in Contract Drawings and in 8 foot or 10 foot lengths.
2. Counterflashing shall extend a minimum of 2 inches below base flashing termination and shall fit tightly against curb.
3. Notch and lap ends of adjoining sections not less than 4 inches; apply sealant tape between sections.
4. Lap miters at corners a minimum of 1 inch and apply sealant between laps. Rivet at 2 inches on center.
5. Completely solder or seal all joints to be watertight.
6. Install closures to completely seal ends of base flashings, membrane and cants as well as end joints of edge metal.

D. Edge Metal:

1. Fabricate edge metal as shown in Contract Drawings and in 8 foot or 10 foot lengths. Refer to SMACNA Manual Figure 2-1 except for continuous cleat dimensions which shall be as shown in Contract Drawings.

    a. Fabricate with 3/4-inch vertical gravel stop at non drainage edges and 1/2-inch vertical gravel stop at drainage edges.

2. Install sheet metal underlayment in a continuous bed of SBS mastic over the roof membrane. Sheet metal underlayment shall be lapped a minimum of 6 inches.
3. Install continuous cleat as indicated in detail drawings fastened to substrate 6 inches on center. Locate fasteners no greater than 2 inches from the bottom hem.
4. Lock metal edge onto continuous cleat and set flange of metal edge in a continuous bed of SBS mastic over sheet metal underlayment and secure flange of metal edge to wood blocking 3 inches on center staggered and not within 1/2-inch from inside edge and 3/4-inch from outside edge. Refer to SMACNA Architectural Sheet Metal Manual Figure 2-4, C-2 for securement to cleat.
5. Leave a 1/4-inch opening between metal edge sections. Center cover plates over opening, set in SBS mastic, and install two nails through the center of the cover plate between metal edge sections. Refer to SMACNA Manual Figure 2-5A.
6. Strip-in flange of metal edge as specified.
7. Hand tong all of metal edge onto continuous cleat.
8. Apply continuous bead of SBS sealant to seal roof membrane at edge metal gravel stop.

E. Roof Drain:

1. Provide roof drain flashings as indicated in detail drawing. Install lead flashing in full bed of roof cement over roof membrane. Form flashing with a rubber

mallet to conform to substrate and extend a minimum of 1 inch beyond clamping ring. Strip-in flashing as specified.

2. Provide new roof drain assembly with cast iron strainer dome and clamping ring and provide new stainless steel clamping ring bolts.
3. Clamping rings shall be secured in place with all bolts at the end of each work day. Contractor shall water test roof drains after every instance the clamping ring is removed and reinstalled. The Contractor shall notify the Owner and Engineer of the water test schedule.

F. Hot Stack:

1. Fabricate flange/sleeve and watertight umbrella as shown in Contract Drawings. Refer to SMACNA Architectural Sheet Metal Manual Figure 4-15C.
2. Provide a 4 inch minimum flange set in a full bead of roof cement over base ply membrane and strip-in as specified.
3. Apply continuous bead of SBS sealant to seal roof membrane at flange.
4. Install watertight umbrella with stainless steel draw band and sealant properly tooled to ensure adhesion and slope to shed water.
5. Vertical leg of umbrella flashing shall extend a minimum of 2 inches below the sleeve top and be positioned as low as possible on the sleeve.
6. Clean and solder all seams.

G. Multiple Pipe Penetration:

1. Fabricate pipe enclosure flashing and pipe enclosure cap as shown in Contract Drawings. Refer to SMACNA Architectural Sheet Metal Manual Figure 4-15A.
2. Size flashing minimum 2 inches larger than the penetration on all sides. Provide a 4 inch minimum flange and double walls with minimum depth of 6 inches.
3. Secure flashing flange to new wood nailer and strip-in flange of metal edge as specified.
4. Apply continuous bead of SBS sealant to seal roof membrane at flange.
5. Notch pipe enclosure cap to fit over pipes and secure pipe enclosure flashing and cap as indicated in detail drawings.
6. Slope pipes way from pipe enclosure flashing.
7. Install foam closure to seal enclosure flashing at pipe penetrations.
8. Clean and solder all seams.

H. Equipment Support:

1. Wrap top of equipment support with sheet metal underlayment to extend 2 inches below base flashing termination.
2. Fabricate equipment support cap at curbs as shown in Contract Drawings in one continuous piece of sheet metal and secure at 8 inches on center.
3. Secure stainless steel support bracket to equipment support with fasteners installed 4 inches on center.
4. Secure stainless steel support bracket to existing roof top equipment with fasteners installed 4 inches on center.

I. Slip Flashing:

1. Fabricate slip flashing at curbs as shown in detail drawings and in 8 or 10 foot lengths.
2. Slip flashing shall extend a minimum of 2 inches below base flashing termination and shall fit tightly against curb.

3. Secure slip flashing 8 inches on center with a minimum of 2 fasteners per side of the curb.
4. Notch and lap ends of adjoining sections not less than 4 inches; apply sealant tape between sections.
5. Lap miters at corners a minimum of 1 inch and apply sealant between laps. Rivet at 2 inches on center.

J. Surface Mounted Two-Piece Receiver and Counterflashing:

1. Fabricate receiver and counterflashing as shown in detail drawings in 10 foot lengths.
2. Install receiver flashing surface mounted at 12 inches on center.
3. Install sealant in kick-out and manually tool concave to ensure proper adhesion and slope to shed water as indicated in detail drawings.
4. Install counterflashing as indicated in detail drawings and secure to receiver flashing 12 inches on center. Stagger receiver anchors with counter flashing fasteners.
5. Counterflashing shall extend a minimum of 1-1/2 inches below base flashing termination.
6. Notch and lap ends of adjoining sheet metal sections not less than 4 inches; apply sealant between sections.
7. Lap miters at corners a minimum of 1 inch and apply sealant between laps. Rivet at 2 inches on center.

K. Surface Mounted Counterflashing

1. Install counterflashing surface mounted at 12 inches on center and within two inches of flashing ends.
2. Install sealant in kick-out and manually tool concave to ensure proper adhesion and slope to shed water as indicated in detail drawings.
3. Counterflashing shall extend a minimum of 1-1/2 inches below surface mounted duct flashing or flashing ply.
4. Notch and lap ends of adjoining sheet metal sections not less than 4 inches; apply sealant between sections.
5. Lap miters at corners a minimum of 1 inch and apply sealant between laps. Rivet at 2 inches on center.

L. Through Edge Scupper

1. Dimensions:

    a. Modify existing primary through edge scupper opening to a completed dimension of 8 inch width and 7 inch height after membrane flashing installation.

2. Fabricate to profile shown in Contract Drawings. Refer to SMACNA Manual Figure 1-29A.
3. Lock scupper liner to edge metal.
4. Clean and solder all seams of the liner.
5. Hot-air weld stripping membrane at seams of the flange and liner.
6. Provide flange which extends a minimum of 4 inches out onto the horizontal membrane. Set all flanges in a full bead of SBS mastic.
7. Strip-in flange as specified in Contract Drawings.
8. Apply continuous bead of SBS sealant to seal roof membrane at flange.

9. Install continuous cleat for scupper faceplate fastened to substrate 6 inches on center in vertical leg. Locate fasteners no greater than 2 inches from the bottom hem.
10. Provide faceplate which extends 1-1/2 inches around the entire scupper and secure to continuous cleat. Set faceplate in a bead of sealant.
11. Scupper Liner shall extend 1-inch beyond the exterior wall face and lock onto faceplate.

M. Through Wall Overflow Scupper:

1. Dimensions:

    a. Modify existing scupper opening to a completed dimension of 8 inch width and 4 inch height after membrane flashing installation.

2. Fabricate through edge and through wall scupper flange, liner, and faceplate as shown in detail drawings.
3. Clean and solder all seams of the flange and liner.
4. Hot-air weld stripping membrane at seams of the flange and liner.
5. Provide flange which extends a minimum of 4 inches out onto the horizontal membrane. Set all flanges in a full bead of SBS mastic.
6. Strip-in flange as specified in Contract Drawings.
7. Apply continuous bead of SBS sealant to seal roof membrane at flange.
8. Install continuous cleat for scupper faceplate fastened to substrate 6 inches on center in vertical leg. Locate fasteners no greater than 2 inches from the bottom hem.
9. Provide faceplate which extends 1-1/2 inches around the entire scupper and secure to continuous cleat. Set faceplate in a bead of sealant.
10. Scupper Liner shall extend 1-inch beyond the exterior wall face and lock onto faceplate.

N. Gutters

1. Dimension: 4 inch length by 4 inch width.
2. Fabricate to profile shown in Contract Drawings. Refer to SMACNA Manual Figure 1-2 Style D.
3. Gutters shall be continuous, roll formed from coil stock on site or formed in 10 foot lengths.

    a. Joints in gutters must be lapped a minimum of 1 inch, riveted 1 inch on center. Install sealant tape between gutter sections and sealant at exposed inside edge and on rivets. Lap joints in the direction of water flow.

4. Provide butt type expansion joints in gutters at spacing appropriate for the type material used to fabricate gutters. Refer to SMACNA Manual Figure 1-7. Maximum length of gutters shall be as indicated.
5. Provide downspout outlet tubes in downspout locations. Refer to SMACNA Manual Figure 1-33B. Gutter outlet tubes to be tabbed a minimum of 1 inch, set in a full bead of sealant and secured to gutter with a minimum of two rivets per tab.
6. Provide primed and painted brackets and spacers as shown in detail drawings. Evenly stagger the placement of brackets and spacers. Spacing shall be 36 inches on center for both brackets and spacers.

7. Spacers shall be riveted to both sides of the gutter only.
8. Brackets shall be secured with two stainless steel fasteners to the wood blocking.
9. Leading edge of gutter to be a minimum of 1 inch below the back edge as shown in detail drawing.
10. Hang gutters level.
11. Edge Metal: Refer to Edge Metal installation indicated above.

O. Downspouts:

1. Dimension: 2 inch length by 3 inch width.
2. Fabricate downspouts in 10 foot lengths. Refer to SMACNA Architectural Sheet Metal Manual Figure 1-32B.
3. Each downspout shall be secured to the structure with two-piece hangers spaced no more than 8 feet apart with a minimum of two hangers per downspout with a hanger located within 12 inches from bottom. Refer to SMACNA Architectural Sheet Metal Manual Figure 1-35H.
4. Downspouts are to be fashioned so as to run back to (at overhangs) and parallel to the facility walls.
5. Provide discharge elbow at the base of downspout.
6. Install splash pans on 32 inch by 20 inch walk pads cemented to membrane manufacturer's walkway pad where downspouts discharge onto roof areas in contract. Fabricate splash pan to meet SMACNA Figure 1-36

3.03 CLEANING AND PROTECTION

A. Immediately remove all metal dust and cut debris produced by cutting, drilling and fastening.

B. All sheet metal work shall be thoroughly cleaned of all asphalt, flux, scrapes and dust.

C. The Contractor shall protect work against damage until final acceptance. The Contractor shall replace or repair to the satisfaction of the Owner, any work that becomes damaged prior to final acceptance.

D. Scratches through the metal finish shall be replaced to the Owner's satisfaction.

END OF SECTION 07 62 00

SECTION 07 65 00

THROUGH WALL FLASHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Replacement of through wall flashing where indicated in Contract Drawings.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Preparation for Reroofing	Section 07 01 50
2.	Modified Bitumen Roofing	Section 07 52 16
3.	Sheet Metal Flashing and Trim	Section 07 62 00

1.03 SUBMITTALS

A. Refer to Section 01 33 00-Submittals.

B. Latest edition of the Manufacturer's current material specifications and installation instructions.

C. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.

D. Mock-up: Provide 3 foot long section of through wall flashing configuration with a joint and end dam shown.

E. Samples: Furnish not less than three individual brick as samples, showing extreme variations in color and texture.

F. Samples: Furnish mortar color samples.

1.04 REFERENCES

A. Refer to the following references for specification compliance:

1. 2012 International Building Code with SC Modifications
2. American Society for Testing and Materials – ASTM
3. International Masonry Institute (IMI)
4. Brick Industry Association (BIA)

1.05 QUALITY REQUIREMENTS

A. Restoration Specialist Qualifications: Engage an experienced restoration firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance.

1. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that clay masonry restoration and

cleaning are in progress. Supervisors shall not be changed during Project except for causes beyond the control of restoration specialist firm.

2. Restoration Worker Qualifications: Persons who are experienced and specialize in restoration work of types they will be performing.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product.

B. Store masonry materials under waterproof covers on pallets clear of ground, and protect damage from handling, dirt, stain, water and wind.

1.07 PROJECT/SITE CONDITIONS

A. Protection of Work

1. Wall covering

a. During erection, cover wall openings if present with waterproof membrane at end of each day or shutdown.
b. Cover partially completed walls when work is not in progress.
c. Extend cover minimum of 24 inches down both sides.
d. Hold cover securely in place.

B. Staining

1. Prevent grout or mortar from staining the face of masonry.

a. Remove immediately grout or mortar in contact with face of such masonry.
b. Protect all sills, ledges and projections from droppings of mortar, protect door jambs and corners from damage during construction.

C. Cold Weather Protection: Comply with applicable sections of "Recommended Practices for Cold Weather Construction" as published by International Masonry Industry All Weather Council.

1. Products

a. Use dry masonry units.
b. Do not use wet or frozen units.

2. Construction requirements while work is progressing

a. Air temperature 40º F. (4º C.) to 32º F. (0º C.): Heat sand or mixing water to produce mortar temperatures between 40º F. (4º C.) and 120º F. (49º C.).
b. Air temperature 32 º F. (0º C.) to 25 º F. (-4º C.): Heat sand and mixing water to produce mortar temperatures between 40º F. (4º C.) and 120º F. (49º C.).
c. Air temperature 25º F. (-4º C.) to 20º F. (-7º C.).

i. Heat sand and mixing water to produce mortar temperatures

between 40º F. (4º C.) and 120º F. (49º C.).

ii. Use salamanders or other heat sources on both sides of walls under construction.

iii. Use windbreaks when wind is in excess of 15 mph.

d. Air temperature 20º F. (-7º C.) and below

i. Heat sand and mixing water to produce mortar temperatures between 40º F. (4º C.) and 120º F. (49º C.).

ii. Provide enclosures and auxiliary heat to maintain air temperature above 32º F. (0º C.).

iii. Minimum temperature of units when laid: 20º F. (-7º C.).

3. Protection requirements for completed masonry and masonry not being worked on

a. Mean daily air temperature 40º F. (4º C.) to 32º F. (0º C.): Protect masonry from rain or snow for 24 hr. by covering with weather-resistive membrane.

b. Mean daily air temperature 32 º F. (0º C.) to 25 º F. (-4º C.): Completely cover masonry with weather-resistive membrane for 24 hr.

c. Mean daily air temperature 25 º F. (-4º C.) to 20 º F. (-7º C.): Completely cover masonry with insulating blankets or equal protection for 24 hr.

1.08 WARRANTY

A. Installer's Two Year Warranty: Contractor's two year warranty on their company letterhead using sample contained in Section 01 77 00-Closeout Procedures.

1. Contractor will be required to attend a Post-Construction field inspection no earlier than twenty- three months and no later than twenty-four months after the Date of Substantial Completion and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 BRICK

A. General: Provide shapes indicated and as follows for each form of brick.

1. Provide units without cores or frogs and with exposed surfaces finished for ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces.

B. Provide special shapes for applications requiring brick of size, form, color and texture on exposed surfaces that cannot be produced by sawing.

1. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes and lintels.
2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

C. Face Brick: ASTM C 216 and as follows:

1. Provide face brick matching color, texture, and size of existing adjacent brickwork.

2. Products: Subject to full compliance with the requirements, provide units from one of the following manufacturers:

   a. General Shale Brick
   b. Ashe Brick Co.
   c. Boren Brick Co.
   d. Cherokee Sanford Group, Inc.
   e. Statesville Brick
   f. Boral Brick Co.
   g. Taylor Clay Products
   h. Triangle Brick
   i. Lee Brick
   j. Engineer approved equivalent.

2.02 MORTAR MATERIALS

A. Match coursing, bonding, color, and texture of existing adjacent masonry.

B. Masonry Mortar Mix: Conform to ASTM C270.

C. Cementituous Materials:

1. Portland Cement: ASTM C 150, Type I
2. Hydrated Lime: ASTM C 207 S
3. Masonry Cements: ASTM C 91, Type M, S or N
4. Mortar Cement: ASTM C1329, Type N, S or M.
5. Blended Hydraulic Cement: ASTM C595, Type IS, IP, I (PM).

D. Sand: ASTM C 144

E. Admixtures: No air-entraining admixtures or material containing air-entraining admixtures. No antifreeze compounds shall be added to mortar. No admixtures containing chlorides shall be added to mortar.

F. Water: Clean and potable.

G. Mortar Pigment:

1. ASTM C 979: Pigment shall not exceed ten percent of the weight of Portland cement.
2. Carbon black shall not exceed two percent of the weight of Portland cement.
3. Color of mortar shall match existing.

2.03 CONCEALED FLASHING

A. Stainless Steel: 26 gauge, Type 304 as tested in accordance with ASTM A 167.

1. Receiver Flashing

B. Through Wall Flashing: 40-mil nominal, **s**elf-sealing, fully adhered, composite flexible flashing consisting of rubberized asphalt bonded to a polyethylene film as approved by

the Engineer.

C. Flashing Mastic: Rubberized asphalt mastic provided and approved by Through Wall Flashing Manufacturer and approved by Engineer.

D. Primer: Provided and approved by Through Wall Flashing Manufacturer and approved by Engineer.

E. Weep Vent: One piece, flexible extrusion manufactured from ultraviolet-resistant polypropylene copolymer, designed to weep moisture in masonry cavity to exterior, sized to fill head joints with outside face held back 1/8 inch from exterior face of masonry, in color selected from manufacturer's standard.

2.04 FASTENERS

A. Screws: #12 hot dipped galvanized or stainless steel hex or pan head screws with length to penetrate substrate a minimum of 1-1/2 inch.

B. Concrete and Masonry Screw:

1. 1/4 inch minimum diameter, Type 410 stainless steel. Length as required to provide minimum 1 inch embedment into substrate, or as required by the fastener manufacturer to achieve required withdrawal load. Acceptable manufacturers:

   a. Tapcon by ITW Buildex.
   b. KWIK-CON II by Hilti.
   c. Engineers accepted equivalent.

C. Washers: Shall be stainless steel with neoprene gasket backing. Shall be 9/16 inch diameter for use with #12 screws and 5/8 inch diameter for use with 1/4 inch diameter concrete and masonry anchors.

D. Rivets: #44 stainless steel rivets with stainless steel mandrel. Length of rivet as required to properly fasten particular sheet metal components. Rivets shall be factory painted to match adjacent sheet metal.

E. Termination Bar: Extruded aluminum bar, 1-inch wide by 1/8-inch thick, with pre-punched holes at 8 inches on center.

F. Toggle Bolts: Shall be stainless steel with 1/8 inch diameter bolt and length as required to penetrate substrate a minimum of 1 inch.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

3.02 CONCEALED FLASHING

A. All work included as part of this section shall be completed prior to removal of the existing roof system at Sectors A and D.

B. Preparation:

1. Remove veneer as required to install concealed flashing. Removal to be clean and straight without damaging or spalling existing work. All damaged existing work to be removed and replaced. Wall shall be properly supported during replacement of shelf angle and through wall flashing.
2. Remove existing flashing components as necessary.
3. Prepare back-up wall surfaces so they are smooth and free from projections that could puncture flashing. Before covering flashing, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.

C. General: Install embedded through wall flashing where indicated in Contract Drawings.

1. Install weep vent snugly at every other mortar joint and at a spacing of no more than 24 inches apart.
2. Do not remove more brick and flashing than can be replaced that same day.
3. All sheet metal joints to be locked and sealed or soldered as required.
4. Provide for thermal movement (expansion and contraction) of all sheet metal.
5. Where dissimilar metals contact, galvanic action shall be prevented by means of heavy coat of asphalt paint.
6. Prime all metal surfaces (top and bottom) to receive asphalt/bituminous materials. Allow primer to dry thoroughly before application of asphalt/bituminous materials.
7. Exposed edges shall be returned (hemmed); both for strength and appearance, and sheet metal shall be fitted closely and neatly.

D. Installation

1. Fabricate receiver flashing as shown in Contract Drawings and install with horizontal flange set in two beads of sealant. Lap adjacent sheet metal sections of receiver flashing a minimum of 6 inches and apply two beads of sealant in the lapped section. Provide 8 inch width stripping of flexible flashing material over lapped area.

    a. At expansion or control joints, leave a 1/4 inch gap between adjacent sheet metal sections and provide a minimum 6 inch width cover plate with two beads of butyl sealant applied on each side of the joint.

2. Apply asphalt primer to receiver flashing and CMU back-up wall.
3. Fully adhere through-wall flashing to back-up wall substrate and new receiver flashing. Terminate top edge of through wall flashing with termination bar and secure at 8 inches on center or into each metal stud wall with masonry screws. Lap through-wall flashing sheets a minimum of 3 inches. Follow through wall flashing manufacturer's guidelines for installation of through wall flashing.
4. Apply flashing mastic to top edge of through wall flashing as shown Contract Drawings and at all seams and laps of through wall flashing material.

3.03 MASONRY INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual widths of masonry units, using units of widths indicated.

B. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut

units as required to provide a continuous pattern and to fit adjoining construction. Where possible, use full-size units without cutting. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

C. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

D. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing adjacent masonry.

E. Wetting of Brick: Wet brick before laying if the initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at the time of laying.

3.04 CONSTRUCTION TOLERANCES

A. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and the following:

B. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4 inch in 20 feet, nor 1/2 inch maximum.

C. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, nor 1/2 inch maximum.

D. For conspicuous horizontal lines, such as exposed lintels, sills, parapets, and reveals, do not vary from level by more than 1/4 inch in 20 feet, nor 1/2 inch maximum.

E. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.

F. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.

3.05 MORTAR MIXING:

A. Mix in a mechanically operated mortar mixer for at least three minutes but not more than five minutes.

B. Measure ingredients by volume. Measure all ingredients using a container with a known capacity.

C. Mix water with dry mortar ingredients in sufficient amount to provide a workable mixture which will adhere to vertical surfaces of masonry units.

D. Mortar that has stiffened because of loss of water through evaporations:

1. Re-temper by adding water to restore to proper consistency and workability.
2. Discard mortar that has reached its initial set or has not been used within two hours.

3.06 MORTAR USE LOCATION:

A. Use Type M mortar for pre-cast concrete panels and engineered reinforced unit masonry work.

B. Use Type S mortar for masonry containing vertical reinforcing bars (non-engineered), masonry below grade, masonry solar screens and setting cast stone.

C. For brick veneer over frame back up walls, use Type N Portland cement-lime mortar or Type S masonry cement or mortar cement mortar.

D. Use Type N mortar for other masonry work, except as otherwise specified.

3.07 MASONRY ERECTION REQUIREMENTS

A. Pattern Bond

1. Lay exposed masonry in running bond.
2. Bond unexposed masonry units in a wythe by lapping at least 2 in. (51 mm).

B. Joining of Work

1. Where fresh masonry joins partially set masonry

   a. Remove loose masonry and mortar.
   b. Clean and lightly wet exposed surface of set masonry.

2. Stop off horizontal run of masonry by racking back ½ length of unit in each course.

C. Tooling

1. Tool exposed joints when "thumb-print" hard with a round jointer, slightly larger than width of joint.
2. Trowel-point or concave-tool exterior joints below grade.

3.08 CAVITIES

A. Keep cavities clean of mortar droppings and other materials during construction. Strike joints facing cavities flush. Use mortar nets placed in cavity to collect mortar droppings.

B. Installing Cavity-Wall Insulation: Replace wall insulation which was removed to accommodate through wall flashing. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry.

3.09 MASONRY JOINT REINFORCEMENT

A. General: Provide continuous masonry joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

1. Space reinforcement not more than 16 inches on center.
2. Provide reinforcement not more than 8 inches above and below wall openings

and extending 12 inches beyond openings.

a. Reinforcement above is in addition to continuous reinforcement.

B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

C. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.10 CLEANING

A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Clean brick by the bucket-and-brush hand-cleaning method described in BIA Technical Notes No. 20, using job-mixed detergent solution.
4. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2 applicable to type of stain on exposed surfaces.

3.11 MASONRY WASTE DISPOSAL

A. Recycling: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Disposal as Fill Material: Dispose of clean masonry waste, including broken masonry units, waste mortar, and excess or soil-contaminated sand, by crushing and mixing with fill material as fill is placed.

1. Crush masonry waste to less than 4 inches in each dimension.
2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Division 31, Section "Earthwork."
3. Do not dispose of masonry waste as fill within 18 inches of finished grade.

C. Excess Masonry Waste: Remove excess, clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 07 65 00

SECTION 07 72 00

ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Furnish and install roof accessory assemblies as indicated and required by the Contract Drawings.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Preparation for Reroofing	Section 07 01 50
2.	Roof Insulation	Section 07 22 16
3.	Modified Bitumen Roofing	Section 07 52 16
4.	Sheet Metal Flashing and Trim	Section 07 62 00

1.03 SUBMITTALS

A. Refer to Section 01 33 00-Submittals.

B. Latest edition of the Manufacturer’s current material specifications and installation instructions.

C. Manufacturer’s Product Data Sheets for all materials specified certifying material complies with all specified requirements.

D. Shop drawings:

1. Submit complete shop drawings and erection details from the roof access door Manufacturer. Work shall not proceed until Manufacturer Approved drawings have been submitted for review and acceptance.
2. Shop drawings shall show methods of erection, framing details, sections and details, anticipated loads, fastener spacing, sealants, interfaces with all materials not supplied and proposed identification of component parts and their finishes.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact.

B. Storage: Adequately protect against damage while stored at the site.

C. Handling: Comply with Manufacturer's instructions.

1.05 PROJECT CONDITIONS

A. Field Measurements: Verify all dimensions required.

1.06 WARRANTIES

A. All roof accessories shall be included in the specified roof system manufacturer's warranty.

PART 2 PRODUCTS

2.01 MATERIALS

A. Precast Concrete Step: Precast lightweight concrete step with overall height of 16 inches, depth of 20 inches and width of 36 inches. Basis of design: Century Group, Inc.'s Step Unit 10028.

B. Support curb: Constructed of 18 gauge galvanized steel, with integral base plate, continuous welded corner seams, treated wood nailer, counterflashing with stainless steel lag screws. Acceptable products:

1. Pate Model es-2
2. Fast Curbs Model EQRC
3. RPS Curbs Model ER-2A

C. Mechanical Equipment Accessories

1. Condensate Line Extension: Schedule 40 PVC, sized to fit existing condensate line.

D. Condensation Line Support: Smooth EPDM rubber pipe support sized to fit the diameter of the pipe being supported and height adjustable. Acceptable products:

1. Olympic Olyflow PipeGuard
2. Erico Caddy Pyramid EZ Series
3. Portable Pipe Hangers
4. Miro Industries

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine subsurfaces to receive Work and report detrimental conditions in writing to Architect. Commencement of Work will be construed as acceptance of subsurfaces.

B. Coordination: Coordinate with other Work which affects, connects with, or will be concealed by this Work

3.02 INSTALLATION

A. Pre-cast Concrete Step: Provide at interior of existing roof access door to Sector A in location identified by Engineer.

B. Pipe Supports

1. Provide pipe supports at all rooftop gas, electrical conduit and condensation lines.

2. Provide new PVC condensation lines with integral P-trap on HVAC units.
3. Route condensation lines to nearest drainage point (i.e. roof drain, gutter, or scupper).
4. Support spacing:

    a. Space condensation line supports at maximum 4 foot spacing.

3.03 CLEANING

A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises.

END OF SECTION 07 72 00

SECTION 07 92 00

ELASTOMERIC JOINT SEALANTS

PART 1 GENERAL

1.01 WORK INCLUDED

A. The Contractor shall re-seal all construction joints in the precast, brick masonry, and around all windows and doors. The Contractor shall remove old materials, properly prepare and clean all joints, prime substrate as determined from sample adhesion tests, install backer-rod or tape to prevent 3-sided adhesion, and install specified sealant properly tooled to ensure adhesion.

B. Wet sealing of all existing windows and storefronts. The contractor shall remove all old wet seals, properly prepare and clean windows and frames in preparation for sealant installation. Install specified sealant properly tooled to ensure adhesion.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1. Unit Masonry Section 04 20 00

1.03 REFERENCES

A. Refer to the following references for specification compliance:

1. Federal Specification TTS-00230C Elastomeric type, cold-applied single-component for caulking, sealing and glazing in building areas, and other structures.
2. ASTM C 719
3. ASTM C 794
4. ASTM C 920

    a. Type S (single-component)
    b. Type M (multi-component)
    c. Grade NS (non-sag)
    d. Class 100/50
    e. Use NT (non-traffic area exposure)
    f. Use M (passes ASTM C 794 and 719 on Mortar)
    g. Use G (passes ASTM C 794 and 719 on Glass)
    h. Use O (passes ASTM C 794 and 719 on Other substrates)

5. ASTM C 1193
6. ASTM C 1248
7. ASTM D 412
8. ASTM D 624

B. Underwriters Laboratories, Inc. – UL

1.04 SUBMITTALS

A. Refer to Section 01 33 00-Submittals.

B. Submit sealant manufacturer's most current product data sheets for the materials specified.

C. Submit sealant manufacturer's installation instructions for each type of joint sealant specified.

D. Samples for Verification: Contractor shall provide Manufacturer's standard color selection for Owner's approval. Physical sample of pre-selected color(s) shall be required for submittal for final approval of color by Owner before installation.

E. Product Certificates: Contractor shall provide certificate(s) from joint sealant Manufacturer indicating compliance with all specified ASTM C-920 and ASTM C-719 for adhesion and cohesion under cyclic movement, adhesion-in-peel and indentation hardness indicating sealant will meet movement class indicated.

F. Compatibility and Adhesion Test Reports: Contractor shall submit Manufacturer's letters indicating actual substrate samples have been tested for adhesion and compatibility. Surface preparation methods shall be included along with primer requirements for the substrates tested.

G. Non-Stain Testing: Contractor shall provide certification for silicone joint sealants indicating completion of stain testing in compliance with ASTM C-1248 for non-fluid-staining results on porous surfaces such as Concrete, Granite and Marble where applicable.

H. Compatibility and Adhesion Test Reports: Contractor shall submit Manufacturer's letters indicating actual substrate samples have been tested for adhesion and compatibility. Surface preparation methods shall be included along with primer requirements for the substrates tested.

1.05 QUALITY ASSURANCE

A. Installer Qualifications:

1. Contractor shall have a minimum of 5 years successful experience in building envelope restoration with the application of elastomeric joint sealants on projects of similar type and nature.
2. Contractor must be approved by Sealant Manufacturer.

B. Manufacturer's Field Services: During construction and until substantial completion, manufacturer's representative shall perform monthly quality assurance site visits to ensure materials are being properly installed and as required to obtain the specified warranty.

1. The manufacturer shall be present during the field mock-up phase and testing.
2. Coordinate all site visits with Engineer. Submit reports of findings within one week of inspection. Payment applications will be rejected until applicable reports are received.
3. Inspections to be performed by an employee of the selected manufacturer that is assigned full time to their technical services department. Sales personnel will not be acceptable for this function and may result in rejection of the roof area installed that does not fulfill this requirement.

4. Manufacturer's final inspections shall be performed only with REI personnel in attendance. A minimum of seven days' written notice is required. Any manufacturer's final inspection conducted without Engineer in attendance will be repeated at no additional cost to the Owner.

C. Source Limitations: Contractor shall obtain each type of joint sealant, related structural glazing sealant or related elastomeric coatings and joint sealant primers through one source from a single Manufacturer.

D. Field Mock-up:

1. Before caulking work begins, the successful contractor shall prepare for caulking three (3) joints, each approximately forty-eight (48") inches long, in each type material to be caulked. The joints shall be treated as hereinafter specified as to preparation. After the joint preparation has been observed by the Engineer, Sealant Manufacturer, and the Contractor, the joints shall be caulked and allowed to reach final cure.
2. After final cure, the Sealant Manufacturer shall obtain samples and test for appropriateness of preparation, installation and for adhesion of sealant to substrate.
3. After the manufacturer's representative has observed the on-site job preparation and sealant application for the test areas, and after the material has been tested for appropriateness of use and field condition compliance with the specifications, the sealant manufacturer shall present to the Engineer a certification that the sealant material is in compliance with the specifications and that field conditions tests confirm that the sealant material is appropriate and suitable for the intended use.
4. Work on the project may not begin until approved field tests have been accepted by the Engineer.

E. During the progress of the work, after material has received final cure, hand pull test in accordance with procedures as published by SWRI, shall be performed by the Contractor in the presence of the Engineer. Tests shall be performed at random times in random areas selected by the Engineer. Contractor shall repair all test areas at no additional charge to the owner.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Material shall be delivered in the manufacturer's original sealed and labeled containers and cartons.

B. Storage. Materials shall be stored out of direct exposure to the elements, located above standing water at least 4 inches above ground level. Non-sweating tarpaulins will be placed to prevent moisture contamination.

C. Sealants are heat and moisture sensitive and shall be protected from excessive heat exposure and moisture exposure.

D. Sealants shall not be exposed to prolonged freezing temperatures.

E. Shelf Life: Products over 9 months old shall not be used unless Manufacturer's published literature allow. Contractor shall document product self-life information, and check expiration date before use.

F. Handling: Material shall be handled in such a manner to prevent exposure to moisture. During cold temperatures (less than 40°F) store containers at room temperature for 24 hours.

1.07 PROJECT CONDITIONS

A. Sealant shall not be applied during precipitation or started in the event there is a probability of precipitation during the application. Conditions shall be forecast to be dry for no less than 24 hours after application

B. Contractor shall ensure all of the sealant Manufacturer's published requirements are followed, including the following general limitations for polyurethane sealants:

1. Do not apply polyurethane sealants to un-cured silicone sealants, or install adjacent to un-cured silicone.
2. Do not allow un-cured polyurethane sealant to come in contact with alcohol-based sealants, butyl sealants, acrylic sealants or any other incompatible materials.
3. Do not allow un-cured polyurethane sealant to come in contact with oil-based caulking/sealants, oil, asphalt, polysulfides, or fillers impregnated with oil, asphalt or tar.
4. Do not install sealant on damp substrates.
5. Do not install where sealant will be continually immersed in water.
6. Do not apply sealant to new "green" treated lumber.
7. Contractor shall prime masonry, stainless steel, copper, galvanized steel and pre-finished metal with sealant Manufacturer's approved primer. Refer to specified primers.
8. Contractor shall follow all of the Manufacturer's published precautions.

C. No more sealant shall be installed than can cure for 24 hours before precipitation.

1.08 WARRANTY

A. Material Manufacturer's Warranty:

1. The Sealant manufacturer shall guarantee their material to have or to exceed the properties specified within this section of the specifications and shall agree to replace all products proved to be defective.
2. Silicone Sealant Warranty shall be for a Twenty (20) year period beginning at date of substantial completion of the work.

A. Installer's Two Year Warranty: Contractor's two year warranty on their company letterhead using sample contained in Section 01 77 00-Closeout Procedures.

1. Contractor will be required to attend a Post-Construction field inspection no earlier than twenty- three months and no later than twenty-four months after the Date of Substantial Completion and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 MATERIALS

A. Silicone Sealant Components:

1. Silicone Sealant: Shall be a one-component, non-sag, neutral cure, low-modulus, UV resistant, high performance silicone sealant for high movement expansions and control joints. Shall meet ASTM C 920, Type S, Grade NS, Class 100/50, Use NT, M, G, A or O. Color to be chosen by Owner from manufacturer's standard color chart, and approved by Owner in advance of application. Acceptable Manufacturers include:

    a. Dow 790 Building Sealant
    b. Pecora 890 NST Silicone
    c. Sikasil-WS 290
    d. GE SCS2000 SilPruf

2. Silicone Sealant (Glazing): Shall be a one-component, non-sag, neutral cure, low-modulus, UV resistant, high performance silicone sealant for high movement expansions and control joints. Shall meet ASTM C 920, Type S, Grade NS, Class 50, Use NT, M, G, A or O. Color to be chosen by Owner from manufacturer's standard color chart, and approved by Owner in advance of application. Acceptable Manufacturers include:

    a. Dow 795 Building Sealant
    b. Pecora 895 NST Silicone
    c. Sikasil-WS 295
    d. GE SCS2800 SilGlaze II

3. Primer: Primer manufactured and recommended by Sealant Manufacturer. Contractor shall consult sealant Manufacturer’s published literature for specific substrate and primer types.
4. Backer Rod: Open-cell polyurethane backer-rod or soft polyethylene backer-rod as recommended by sealant Manufacturer. Backer rod shall be 25% greater than joint for tight fitting compression in the joint.
5. Bond-breaker Tape: Polyethylene strip or tape, as recommended by or supplied by the sealant Manufacturer to prevent 3-sided bond in joints.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Verification of Conditions: Contractor shall inspect joints indicated for restoration with joint sealants and verify joint substrate conditions are acceptable for installation in accordance with sealant Manufacturer’s instructions. Contractor shall correct unsatisfactory conditions before installing sealants.

1. General: Contractor shall determine acceptable removal techniques for contaminants harmful to joint sealant performance such as dust, dirt, grease, oils, curing compounds, form release agents, laitance and waterproofing film or over-spray coatings. All surfaces shall be cleaned and totally dry, frost-free and dust-free before sealant application to ensure optimum results.
2. Surface Defects and Repairs: Contractor shall identify contaminants in substrates that are harmful to system performance. Contractor shall remove and legally dispose of existing joint sealants or contaminated materials. New substrates or newly repaired surface defects shall be allowed to cure to full, load-bearing capacity per manufacturer’s recommendations. Porous surfaces shall be cleaned using heavy-duty brushing or light abrasive cleaning methods followed by oil-free, compressed air blast.

B. Commencement of work signifies Contractor's acceptance of substrate. Any defects in sealant work resulting from such accepted substrates shall be corrected by the Contractor at no additional expense to the Owner.

3.02 PREPARATION

A. Refer to Section 09 97 23-Elastomeric Concrete and Masonry Coating for additional Surface Preparation requirements to be completed prior to Work described in this Section.

B. General: Prior to installation, the Contractor shall remove existing joint sealant materials and clean substrates of substances that could impair the bond of joint sealants. The Contractor shall remove any existing joint sealant residue. The Contractor shall clean and prepare joint surfaces immediately before installing joint sealants. The Contractor shall protect adjacent work areas and finished surfaces from damage during joint sealant installation.

C. The Contractor shall clean porous joint surfaces by using heavy-duty brushing, light abrasive, mechanical abrading or combination of these methods to produce a clean, sound surface for optimum bond with joint sealants per manufacturer’s recommendations. Provide a dry, dust-free and cleaned substrate for optimum results.

D. Non-porous surfaces shall be cleaned using the two-cloth solvent wipe method as referenced in ASTM C-1193 and outlined by joint sealant manufacturer’s instruction. IPA (isopropyl alcohol) is not a degreasing solvent yet may be used in new construction for non-porous joint cleaning and preparation. Use xylene, toluene or MEK for degreasing solvent and general cleaning of non-porous surfaces. The Contractor shall follow all applicable precautions associated with solvents.

E. The Contractor shall coordinate cleaning, priming and installation to avoid contamination of wet, freshly coated or on adjacent finished surfaces. Rusting or scaling surfaces shall be removed using abrasive cleaning methods as recommended by joint sealant Manufacturer prior to joint sealant installation.

F. Efflorescence, mold, mildew and algae shall be removed and neutralized by the Contractor prior to joint sealant installation. Prepare finish-coated surfaces in accordance with joint sealant Manufacturer’s specific recommendations.

3.03 INSTALLATION

A. General: The Contractor shall comply with joint sealant Manufacturer’s written installation instructions for products, primers and applications.

B. Contractor shall apply joint sealants for continuous waterproof sealant joint protection. Vertical joints should be lapped over horizontal joints as recommended by sealant Manufacturer. Contractor shall comply with installation recommendations in ASTM C-1193 for use of joint sealants as applicable to each specific sealant installation.

C. Contractor shall install sealant primers when recommended by sealant Manufacturer and demonstrated at pre-construction tests after joint surface preparation has been completed and when surfaces are verified as clean and dry.

1. Apply sealant Manufacturer’s primer per Manufacturer’s instructions.
2. Contractor shall follow Manufacturer’s specific safety, health and environmental

recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with applicable EPA, OSHA and VOC requirements regarding health/safety standards.

3. Contractor shall allow any primer installation to completely dry or cure prior to installation of backing or joint sealants.

D. Contractor shall install joint sealant backings of type and size required.

1. Avoid gaps, twisting, stretching or puncturing joint sealant backing materials. Place backing materials into joint opening using a gauge or roller-tool designed to provide the appropriate uniform depth allowing optimum sealant profile, sealant coverage and long-term joint sealant performance.
2. Install bond-breaker tape behind sealant joints where sealant backings are not feasible and to avoid 3-sided adhesion at backside of sealant joint.
3. Use masking tape to protect adjacent finished surfaces prior to joint sealant installation.

E. Contractor shall install joint sealants in accordance with joint sealant Manufacturer's instructions using proven techniques that comply with the following and in proper sequence with installation of joint backings.

1. Using proper joint sealant dispensing equipment, place sealants by pushing sealant beads into opening to fully wet-out joint sealant substrates. Fill sealant joint opening to full and proper configuration.
2. Install, providing uniform cross-sectional shapes and depths in relation to joint width for optimum sealant movement capability per joint sealant manufacturer's instructions.

F. Contractor shall tool all non-sag joint sealant installations. Immediately after placing fresh sealants and before skinning or curing begins, tool sealants using metal spatulas designed for this purpose in accordance with sealant Manufacturer's recommendation. Tooling process should form a smooth, uniform sealant finish, eliminating air pockets and ensuring good contact for optimum joint sealant adhesion within each side of the joint opening.

1. Provide concave joint configuration as indicated per figure 5-A in ASTM C-1193 unless otherwise indicated for the project. Wet tooling of joint sealants is not permitted.
2. Remove excess sealant from surfaces adjacent to joint openings using metal spatula, promptly cleaning any sealant residue from adjacent finished surfaces. Remove masking after joint sealant is installed.

G. The Contractor shall allow joint sealants to cure for a minimum of seven (7) days before adhesion testing is performed as recommended by joint sealant Manufacturer for field-testing.

H. The Contractor shall match approved sealant mock-up for color, finish and overall aesthetics. The Contractor shall remove, refinish or re-install work not in compliance with the Contract Documents.

3.04 WET SEAL/CAP BEAD INSTALLATION

A. Remove existing cap bead materials between glass and frame before cleaning substrates of substances that could impair the bond of joint sealants.

B. Ensure window gasket is cut flush with the top of the frame and apply bond breaker tape over the exposed top edge of the gasket prior to sealant cap bead installation. If no gasket is present, fill the void between the glass and the frame with backer rod.

C. Apply sealant and neatly tool in place to ensure proper adhesion.

3.05 FIELD QUALITY CONTROL

A. Where required above, the Contractor shall ensure Manufacturer's field service is provided consisting of site visits at the start of the project, during application, and upon completion of the project. Site visits shall be by qualified Manufacturer's representative.

B. Field-Adhesion Testing: The Contractor shall keep daily log of sealant installation recording self-performed field-adhesion testing at each elevation of the project and as follows:

1. The Contractor shall document and perform field-adhesion testing in accordance with Manufacturer's recommended field-adhesion testing to qualify for joint sealant Manufacturer's Warranty.
2. The Contractor shall be responsible for performing five (5) field-adhesion tests for the first 1000 lineal feet and one test in each 1000 lineal feet of sealant joint length thereafter. When the sealant is used to weatherseal between two (2) dissimilar substrates, the sealant adhesion to each side of the joint should be individually tested.
3. The Contractor shall field test joint sealants in accordance with Method A, Field-Applied Sealant Joint Hand-Pull Tab, in Appendix X-1 in ASTM C-1193 and in compliance with Manufacturer's specific recommendations.
4. Evaluation: In compliance with joint sealant manufacturer, joint sealants tested and not indicating adhesive failure within the substrates are considered satisfactory results. For joint sealants that fail to adhere to the substrate, clean, re-install and then re-test until satisfactory results are obtained.

C. The Engineer and Owner reserves the right to complete recommended testing required by the Manufacturer at completion of work to ensure warranty requirements and contract compliance are met.

3.06 CLEANING AND PROTECTION

A. The Contractor shall clean off/remove excess sealant or sealant residue adjacent to joint sealant installations as the work progresses by methods approved by joint sealant Manufacturer. The Contractor shall not damage adjacent surfaces with harmful removal techniques and protect finished surfaces beyond those that have been masked. The Contractor shall protect installed sealants during and after final curing from damage resulting during construction. The Contractor shall remove and replace damaged joint sealants.

B. The Contractor shall remove temporary coverings and masking protection from adjacent work areas upon completion. Remove construction debris from the project site on a planned and regular basis.

END OF SECTION 07 92 00

DIVISION 09 FINISHES

SECTION 09 01 90

ELASTOMERIC COATING RESTORATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Repair stucco walls and provide finish coating for vertical, above-grade stucco (Portland cement plaster).

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Unit Masonry	Section 04 20 00
2.	Elastomeric Joint Sealants	Section 07 92 00

1.03 SUBMITTALS

A. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.

B. Provide 4' x 4' mock-up of coating.

C. Color samples.

1.04 REFERENCES

A. ASTM C 1305, Crack Bridging

B. ASTM D 412, Tensile Strength, Elongation, and Recovery

C. ASTM D 522, Mandrel Bend Flexibility

D. ASTM D 2247, Moisture Resistance

E. ASTM D 3273, Mold Resistance

F. ASTM D 4541, Direct Tensile Bond

G. ASTM E 96, Water Vapor Permeability, wet cup method

H. EN 1062, Carbon Dioxide Diffusion

I. EPA Method 24, VOC

J. Federal Specification TT C 555 B

K. SWRI Priority Property Profile for Elastomeric Wall Coatings

1.05 QUALITY ASSURANCE:

A. Qualifications:

1. Manufacturer Qualifications: Company with minimum 15 years of experience in manufacturing of specified products and systems.
2. Applicator Qualifications: Company with minimum of 5 years experience in application of specified products and systems on projects of similar size and scope, and is acceptable to product manufacturer.

B. Field Sample:

1. Install at pre-selected area of building an area for field sample, minimum 4 feet by 4 feet, using specified system.
2. Apply material in strict accordance with manufacturer's written application instructions.
3. surface preparation, repair, and workmanship.
4. Field sample will be standard for judging workmanship on remainder of Project.
5. Maintain field sample during construction for workmanship comparison.
6. Obtain Consultant's written approval of field sample before start of material application, including approval of aesthetics, color, texture, and appearance.

C. Preconstruction Field-Adhesion Testing:

1. Perform adhesion per ASTM D3359, Measuring Adhesion by Tape, Method A. Minimum adhesion rating of 4A is required on 0 to 5 scale.

D. Stucco Thickness: General

1. Direct Application to Concrete or Concrete Masonry:

a. Stucco thickness shall not exceed ½ inch (13 mm) applied in one or two coats.
b. Stucco thickness shall not exceed 5/8-inch (16 mm) applied in three coats.

2. Application to Metal Plaster Bases:

a. Galvanized diamond mesh metal lath:

i. 1.75 lb/yd^2 (1 kg/m^2): stucco thickness shall be ½ inch (13 mm) applied in one or two coats.
ii. Minimum 2.5 lb/yd^2 (1.4 kg/m^2): stucco thickness shall be ½ to 7/8 inch (13 to 22 mm). ½ inch (13 mm) thickness shall be applied in one or two coats. Thicknesses in excess of ½ inch up to 7/8 inch (13 up to 22 mm) shall be applied in two coats.

b. Woven wire fabric lath: stucco thickness shall be ½ inch (13 mm) applied in one or two coats.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver products in original packaging, labeled with product identification, manufacturer, batch number and shelf life.

B. Store products in a dry area with temperature maintained between 50 and 85 degrees F (10 and 29 degrees C). Protect from direct sunlight. Protect from freezing. Protect from extreme heat (> 90 degrees F (32 degrees C)).

C. Handle products in accordance with manufacturer's printed recommendations.

1.07 PROJECT CONDITIONS:

A. Environmental Requirements:

1. Ensure that substrate surface and ambient air temperature are minimum of 40 degrees F (4 degrees C) and rising at application time and remain above 40 degrees F (4 degrees C) for at least 24 hours after application. Ensure that frost or frozen surfaces are thawed and dry.
2. Do not apply material if snow, rain, fog, and mist are anticipated within 12 hours after application. Allow surfaces to attain temperature and conditions specified before proceeding with coating system application.
3. Do not apply over sealant joints.
4. Do not apply to horizontal traffic-bearing surfaces.

1.08 WARRANTY

A. Provide manufacturer’s standard written warranty against defects of materials for their standard warranty length, beginning with date of substantial completion of the project.

A. Installer’s Guarantee: Contractor’s two year warranty on their company letterhead using sample contained in Section 01 77 00-Closeout Procedures.

1. Contractor will be required to attend a Post-Construction field inspection no earlier than twenty- three months and no later than twenty-four months after the Date of Substantial Completion and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Whenever a particular make of material, trade name and/or manufacturer's name is specified herein, it shall be regarded as being indicative of the minimum standard of quality and performance characteristics required. Specific manufacturer’s requirements in regards to preparation, application, etc. shall be followed if differing from the specified requirements. Subject to compliance with requirements, provide products from the following manufacturers:

1. BASF Senergy Senerlastic Coating
2. Sto Stolastic Smooth
3. Dryvit Weatherlastic Smooth

B. Specifications and Drawings are based on manufacturer's proprietary literature from Sto Corporation. Other manufacturers shall comply with minimum levels of material, color selection, and detailing indicated in Specifications or on Drawings. Engineer will be sole judge of appropriateness of substitutions.

2.02 MATERIALS

A. Concrete and stucco substrate primer: Acrylic-based, tinted, high-pH compatible primer/sealer:

1. Performance and Physical Properties: Meet or exceed the following values for material cured at 73 degrees F (23 degrees C) and 50 percent relative humidity (unless otherwise specified).

a. Application: Spray, roller, or brush.
b. Working time: 10-20 minutes, depending on ambient conditions.
c. Adhesion to concrete: 680 psi (4.69 MPa), ASTM D 4541
d. Flame Spread Index: 0, ASTM E 84,
e. Smoke Developed: 10, ASTM E 84
f. Water vapor transmission: 30 perms (1720 ng/Pa·s·m^2), tested at 3 dry mils applied in one coat, ASTM E 96, wet cup method.
g. VOC: < 0.84 lb/gal (100 g/L), EPA 24

B. Acrylic-based, weatherproofing colored coating: Single component acrylic-based coating, containing acrylic polymer, and colored pigments. Product shall comply with the following:

1. Performance and Physical Properties: Meet or exceed the following values for material cured at 73 degrees F (23 degrees C) and 50 percent relative humidity (unless otherwise specified).

a. Application: Spray, roller, or brush.
b. Working Time: 10-30 minutes.
c. Crack Bridging: No cracking at -15 degrees F (-26 degrees C), ASTM C 1305
d. Tensile Strength: 420 psi (2.90 MPa), minimum. ASTM D 412
e. Elongation: 415 percent, minimum, at break, ASTM D 412.
f. Moisture Resistance: No defects attributable to adhesion, discoloration, blistering, cracking, flaking, ASTM D 2247, 14 day exposure.
g. Flexibility Mandrel Bend: No cracking at 70 degrees F (21 degrees C) and -14 degrees F (-26 degrees C), ASTM D 522.
h. Mold Resistance: No Mold Growth at 90 days, ASTM D 3273
i. Adhesion to Concrete: 345 psi (2.38 MPa), ASTM D 4541
j. Water Vapor Permeability: 41 perms (2350 ng/Pa·s·m^2) tested at 4 dry mils, applied in one coat, and 32 perms (1720 ng/Pa·s·m^2) tested at 11 dry mils, applied in two coats, ASTM E 96, wet cup method.
k. Carbon Dioxide Diffusion Resistance Coefficient: 496,000 EN 1062
l. Carbon Dioxide Diffusion Resistance: 144 m, EN 1062
m. VOC: 0.6 lb/gal (76 g/L), EPA 24
n. Resistance to wind-driven rain: No penetration, weight gain less than 0.5 lbs (1.1 kg), TT C 555 B.

2. Product shall comply with SWRI Priority Property Profile for Elastomeric Wall Coatings.

C. Stucco Repair:

1. Stucco: Factory proportioned, fiber reinforced portland cement based stucco for

trowel or pump application, field mixed with graded sand and water.

2. Finish Coat: Acrylic or silicone enhanced acrylic textured wall finish.
3. Accessories:

    a. Weep screed, casing bead, corner bead, corner lath, expansion and control joint accessories. All accessories shall meet the requirements of ASTM C 1063 and its referenced documents:

        i. PVC plastic in compliance with ASTM D 1784, cell classification 13244C.
        ii. Zinc in compliance with ASTM B 69.
        iii. Galvanized metal in compliance with ASTM A 653 with G60 coating.

    b. All accessories shall have perforated or expanded flanges and shall be designed with grounds for the specified thickness of stucco.

4. Job mixed ingredients

    a. Water—clean and potable.
    b. Clean, well graded sand free of deleterious materials in compliance with ASTM C 897 or ASTM C144.

5. Mixing:

    a. Stucco - mix 200 lbs. (90 kg) of sand to an 80 lb (36 kg) bag of Stucco and approximately 4 gallons (15 L) of clean water in a paddle type mortar mixer. Add ½ to 2/3 of the required water, ½ of the sand, and one bag of Stucco in a paddle type mortar mixer. Then add the rest of the sand and sufficient water to achieve a uniform mix of workable consistency. Mix for 3—5 minutes after all materials are in the mixer. Stucco material can be retempered once in the first hour after mixing. Avoid retempering after the first hour and discard material older than 1.5 hours. Keep mix ratio consistent from batch to batch and mix each batch separately. Use only the amount of water necessary for a workable mix. Use of excess water is detrimental to performance.
    b. Finish--mix with a clean, rust-free high speed mixer to a uniform consistency. A small amount of water may be added to adjust workability. Limit addition of water to amount needed to achieve the finish texture.
    c. Mix only as much material as can readily be used.
    d. Do not use anti-freeze compounds or other additives.

6. Crack Repair Material: Embed glass fiber mesh in acrylic based, non-dag filler designed for use for cracks in excess of 1/8” width.

PART 3 EXECUTION

3.01 EXAMINATION:

A. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.

B. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas and landscaping from contact due to mixing and handling of materials.

3.02 SURFACE PREPARATION:

A. Protect adjacent Work areas and finish surfaces from damage during coating system application.

B. Ensure that substrate is sound, clean, dry, and free of dust, dirt, oils, grease, laitance, efflorescence, mildew, fungus, biological residues, chemical contaminants, and other contaminants that could prevent proper adhesion.

C. Comply with manufacturer's printed instructions and the following:

1. Clean surface by using high-pressure waterblasting.
2. Ensure area being repaired is structurally sound and fully cured.
3. Remove blisters and loose or delaminated areas.
4. Wash down prepared surfaces and allow to completely dry.

D. Chalky Surfaces: Treat chalky surfaces, as defined by ASTM D4214, Test Method A, with water cleaning and application of primer approved by coating manufacturer.

3.03 STUCCO REPAIR/REPLACEMENT

A. Provide new stucco to repair removed area. New stucco shall be installed to provide a straight line between the existing and new.

B. Follow manufacturer's guidelines for mixing and application of stucco.

C. Surface Preparation: Remove projecting joint mortar so it is even with the plane of the wall. Remove surface contaminants such as efflorescence, existing paint or any other bond inhibiting material by sandblasting, waterblasting, wire brushing, chipping or other appropriate means. Pre-moisten the surface with water just prior to placement of stucco, or apply one uniform coat of bonding agent by brush or roller.

D. Installation over cast-in-place concrete or concrete masonry units:

1. Install foundation weep screed at the base of the wall.
2. Install casing beads at stucco terminations—doors, windows and other through wall penetrations. Install two piece expansion joints (or back-to-back casing beads) at joints in the supporting construction, building expansion joints, where the stucco is to be installed over dissimilar construction or substrates, at changes in building height, at floor lines, columns, and cantilevered areas. Install one piece expansion joints at corners of windows, doors and similar through wall penetrations, and every 250 ft^2 (23 m^2). Install corner bead at outside corners and corner lath at inside corners. Install full accessory pieces where possible and avoid small pieces. Seal adjoining pieces by embedding ends in sealant. Abut horizontal into vertical joint accessories. Attach at no more than 7 inches (178 mm) on center into concrete/masonry with appropriate fasteners.
3. Pre-moisten concrete masonry units and absorbent concrete prior to the placement of stucco (unless bonding agent has been applied to the CMU surface).
4. Scratch Coat: apply the stucco with sufficient pressure to ensure intimate contact

with the substrate and complete coverage to an approximate thickness of 1/4 inch (6 mm). Score the stucco upon completion of each panel in preparation for a second coat. Score horizontally.

5. Brown Coat: as soon as the first coat is firm enough to receive the second coat without damage, apply the second coat. Alternatively, moist cure the first coat up to 48 hours and dampen the scratched surface with water immediately before applying the second coat. Apply the second coat with sufficient pressure to ensure intimate contact with the first coat to an approximate thickness of 1/8 or 1/4 inch (3 or 6 mm) and as needed to bring the stucco to the desired thickness. Use a rod or straight edge to bring the surface to a true, even plane. Fill depressions in plane with stucco. Final thickness of stucco shall not exceed ½ inch (13 mm).
6. After the stucco has lost sufficient moisture so that the surface sheen has disappeared, float the surface lightly with a darby or wood float to densify the surface and to provide a smooth, even surface. Float before the stucco becomes so rigid that it cannot be moved beneath the float.
7. Moist cure after the stucco has set by lightly fogging the surface for at least 48 hours. Fog as frequently as required during the 48 hour period to prevent loss of moisture from the stucco. Avoid eroding the stucco surface with excess moisture. If relative humidity exceeds 75% the frequency of moist-curing can be diminished.

E. Finish Installation

1. Apply finish to primed stucco and foam build-outs when dry. Apply finish by spraying or troweling with a stainless steel trowel, depending on the finish specified. Follow these general rules for application of finish:

    a. Avoid application in direct sunlight.
    b. Apply finish in a continuous application, and work a wet edge towards the unfinished wall area. Work to an architectural break in the wall before stopping to avoid cold joints.
    c. Weather conditions affect application and drying time. Hot or dry conditions limit working time and accelerate drying. Adjustments in the scheduling of work may be required to achieve desired results; cool or damp conditions extend working time and retard drying and may require added measures of protection against wind, dust, dirt, rain and freezing. Adjust work schedule and provide protection.
    d. Float "R" (rilled texture) finishes with a plastic float to achieve their rilled texture.
    e. Do not install separate batches of finish side-by-side.
    f. Do not apply finish into or over joints or accessories. Apply finish to outside face of wall only.
    g. Do not apply finish over irregular or unprepared surfaces, or surfaces not in compliance with the requirements of the project specifications.

3.04 INSTALLATION OF ELASTOMERIC COATING

A. Mixing: Comply with manufacturer's printed instructions and the following.

1. Precondition to temperature of 70 plus or minus 5 degrees F (21 plus or minus 2.5 degrees C) prior to application.
2. Mix using a mechanical mixer to achieve a uniform consistency immediately

prior to use.

B. Application: Comply with manufacturer's printed instructions and the following. Use approved equipment for application.

1. Apply when ambient and surface temperatures are 40 degrees F (4 degrees C) and rising.
2. Do not apply in freezing conditions or during precipitation.
3. Do not apply if the surface temperature is less than 5 degrees F (2.8 degrees C) above the ambient dew point temperature.
4. Concrete and stucco substrates: Apply 805 primer in one coat by brush, roller, or spray to a thickness of 5 wet mils.
5. Allow primer to dry completely before applying finish coating.
6. Apply one coat, 12-14 wet mils, coating to primed surface. Allow first coat to dry, and apply a second coat, 12 – 14 wet mils. Mil thickness may vary based upon manufacturer's recommendation.
7. Protect installed materials from rain, freezing, and continuous high humidity until completely dry.
8. Do not overcoat with solvent-based materials.

3.05 CURING

A. Drying time to touch is 6 hours at 70 degrees F (21 degrees C) and 50 percent relative humidity if applied at 18 to 20 mils WFT (457 to 508 microns). Recoat in minimum of 12 to 24 hours.

3.06 CLEANING

A. Clean tools and equipment with soapy water.

B. Clean up and properly dispose of debris remaining on Project site related to application.

C. Remove temporary coverings and protection from adjacent Work areas.

END OF SECTION 09 01 90

SECTION 09 91 13

EXTERIOR PAINT

PART 1 GENERAL

1.01 WORK INCLUDES

A. Contractor shall prepare existing and new substrates, prime and paint in accordance with Manufacturer's instructions for building components specified.

B. Contractor shall be responsible for completing all sampling, testing and abatement requirements for existing lead-based paint included in Work.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Preparation for Reroofing	Section 07 01 50
2.	Sheet Metal Flashing and Trim	Section 07 62 00

1.03 REFERENCES

A. SSPC-SP 1 - Solvent Cleaning.

B. SSPC-SP 2 - Hand Tool Cleaning.

C. SSPC-SP 3 - Power Tool Cleaning.

1.04 SUBMITTALS

A. Refer to Section 01 33 00 for Submittals.

B. Product Data: Manufacturer's data sheets on each paint and coating product should include:

1. Product characteristics
2. Surface preparation instructions and recommendations
3. Primer requirements and finish specification
4. Storage and handling requirements and recommendations
5. Application methods
6. Precautions

C. MSDS for each product.

D. Samples: Submit color chart that represents Manufacture's color samples available for Owner's selection.

E. Mockup: Submit mockup of actual paint system before starting work as required by Owner for color selection/acceptance.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver Manufacturer's unopened containers to the work site. Packaging shall bear the Manufactures name, label, and the following list of information:

1. Product name, type (description)
2. Application & use instructions
3. Surface preparation
4. VOC content
5. Environmental issues
6. Batch date
7. Color number

B. Storage: Contractor shall store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction. Store materials in an area that is within the acceptable temperature range, per Manufacturers instructions. Protect from freezing.

C. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

D. Contractor shall be responsible for all fire safety and prevention requirements for all materials.

1.06 PROJECT CONDITIONS

A. Contractor shall ensure or maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by Manufacturer for optimum results. Contractor shall not apply coatings under environmental conditions outside Manufacturer's absolute limits.

B. Contractor shall be responsible for all sampling, testing and abatement requirements for existing lead-based included in the Work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers:

1. The Sherwin-Williams Company
2. ICI Dulux
3. Duron, Inc.

B. Manufacturer’s exterior rust inhibitive primer and paint system for optimum performance for exposed, exterior building type, compatible with the following substrate surfaces.

1. Steel
2. Wood
3. Masonry

2.02 MATERIALS - GENERAL REQUIREMENTS

A. Paints and Coatings: Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with Manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in Manufacturer's product instructions.

B. Rust Inhibitive Primers: Where the Manufacturer offers options on primers for a particular substrate, use primer categorized for optimum performance by the

Manufacturer. Use factory-formulated rust-inhibitive metal primer for exterior application. Provide heat resistant primer at all heat venting stack housing, sleeves, and skirts.

2.03 ACCESSORIES:

A. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required per Manufacturer's printed requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Contractor shall not begin application of coatings until substrates have been properly prepared. Contractor shall notify Engineer of unsatisfactory conditions before proceeding.

B. Contractor shall proceed with work only after conditions have been corrected, and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.

3.02 SURFACE PREPARATION:

A. Contractor shall comply with all lead-based paint abatement requirements where existing lead based paint is encountered in the Work.

B. Contractor shall consult Manufacturer to ensure proper product selection, surface preparation, and application for optimum coating performance. Contractor shall be responsible for proper product selection, surface preparation, and application.

C. The surface shall be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint, coatings, or other contamination to ensure good adhesion. Wire brush all existing exposed steel components to remove all rust, debris, etc.

D. Contractor shall remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow the surface to dry 48 hours before painting.

E. Contractor shall not painting immediately after a rain, during foggy weather, when rain is predicted, or when the temperature is below 50°F, unless products are designed specifically for these conditions. Follow Manufacturer's printed instructions.

F. Methods:

1. Galvanized Metal:

    a. Clean using detergent and water or a degreasing cleaner to remove greases and oils. Apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast to remove these treatments.

2. Steel: Structural, Plate, etc. Contractor shall clean by one or more of the ten surface preparations described below. These methods were originally established by the Steel Structures Painting Council in 1952, and are used throughout the

world for describing methods for cleaning structural steel. Visual standards are available through the Steel Structures Painting Council, SSPC-VIS 1-89. A brief description of these standards together with numbers by which they can be specified follow.

a. Solvent Cleaning, SSPC-SP1: Solvent cleaning is a method for removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants. Solvent cleaning does not remove rust or mill scale. Change rags and cleaning solution frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process. Be sure to allow adequate ventilation.

b. Hand Tool Cleaning, SSPC-SP2: Hand Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before hand tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.

c. Power Tool Cleaning, SSPC-SP3: Power Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before power tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.

d. White Metal Blast Cleaning, SSPC-SP5 or NACE 1: A White Metal Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.

e. Commercial Blast Cleaning, SSPC-SP6 or NACE 3: A Commercial Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 33 percent of each square inch of surface area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.

f. Brush-Off Blast Cleaning, SSPC-SP7 or NACE 4: A Brush-Off Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, loose mill scale, loose rust, and loose paint. Tightly adherent mill scale, rust, and paint may remain on the surface. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP 1 or other agreed upon methods.

g. Power Tool Cleaning to Bare Metal, SSPC-SP11: Metallic surfaces that are prepared according to this specification, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxide corrosion products, and other foreign matter. Slight residues of rust and paint may be left in the lower portions of pits if the original surface is pitted. Prior to power tool surface preparation, remove visible deposits of oil or grease by any of the methods specified in SSPC-SP1, Solvent Cleaning, or other agreed upon methods.

h. Near-White Blast Cleaning, SSPC-SP10 or NACE 2: A Near-White Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining

shall be limited to no more than 5 percent of each square inch of surface area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods. High- and Ultra-High Pressure Water Jetting for Steel and Other Hard Materials, SSPC-SP12 or NACE 5: This standard provides requirements for the use of high- and ultra-high pressure water jetting to achieve various degrees of surface cleanliness. This standard is limited in scope to the use of water only without the addition of solid particles in the stream.

i. Water Blasting, NACE Standard RP-01-72: Removal of oil grease dirt, loose rust, loose mill scale, and loose paint by water at pressures of 2,000 to 2,500 psi at a flow of 4 to 14 gallons per minute.

3. Wood:

a. Seal knots, pitch streaks, and sap areas with manufacturer's approved exterior sealer:
b. Fill nail recesses with putty or a glazing compound.
c. Let fillers dry, then sand surfaces smooth.
d. Fill cracks or joints in or between wood with a quality acrylic or siliconized acrylic latex caulk.
e. Apply primer coat to wood.

3.03 INSTALLATION

A. Contractor shall apply all coatings and materials in accordance with Manufacture printed recommendations. Contractor shall apply a no less than a single-coat of primer, and two coats of paint. Thickness shall be determined by Manufacturer's printed requirements for optimum or "best" performance.

B. Contractor shall not apply coatings to wet or damp surfaces, during periods of fog, or at or below the dew point temperature.

C. Contractor shall apply coatings using methods and application tools recommended by Manufacturer.

D. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.

E. Apply coatings at spreading rate required to achieve the Manufacturers recommended dry film thickness.

F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

G. Time between primer and coats shall be per Manufacturer's printed requirements.

H. Inspection: The coated surface shall be inspected and accepted by the Engineer and Owner.

3.04 PROTECTION

A. Protect finished coatings from damage until completion of project.

B. Touch-up damaged coatings after substantial completion, following manufactures recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

3.05 CLEAN-UP

A. Contractor shall clean-up and remove all spills, and coatings on adjacent substrates to the Owner's satisfaction.

B. Contractor shall dispose of all containers and waste in a legal manner immediately.

END OF SECTION 09 91 13

SECTION 09 97 23

ELASTOMERIC CONCRETE AND MASONRY COATING

PART 1 GENERAL

1.01 WORK INCLUDED

A. Application of a one component, elastomeric, silicone, high solids, UV resistant waterproof coating over prepared exposed concrete masonry.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Preparation for Reroofing	Section 07 01 50
2.	Modified Bitumen Roofing	Section 07 52 16
3.	Sheet Metal Flashing and Trim	Section 07 62 00

1.03 SUBMITTALS

A. Refer to Section 01 33 00-Submittals.

B. Submit latest edition of the Manufacturer’s current material specifications and installation instructions.

C. Submit Manufacturer’s Product Data Sheets for all materials specified certifying material complies with all specified requirements.

D. Submit Manufacturer's color samples.

E. Submit Manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

1.04 QUALITY ASSURANCE:

A. Qualifications:

1. Manufacturer Qualifications: Company with minimum 15 years of experience in manufacturing of specified products and systems.
2. Applicator Qualifications: Company with minimum of 5 years experience in application of specified products and systems on projects of similar size and scope, and is approved by product manufacturer.

B. Field Sample:

1. Prepare field sample of coating for each type of surface using same materials, tools, equipment, and procedures intended for actual surface preparation and application under actual use and environmental conditions.
2. Install at pre-selected area of building an area for field sample, minimum 4 feet by 4 feet, using specified system.
3. Apply material in strict accordance with manufacturer’s written application instructions.

4. Verify effectiveness of surface preparation and performance of coating.
5. Maintain field sample during construction for workmanship comparison.

    a. Field sample will be standard for judging workmanship on remainder of Project.

C. Preconstruction Field-Adhesion Testing:

1. Perform adhesion testing per ASTM D3359, Measuring Adhesion by Tape, Method A. Minimum adhesion rating of 5A is required on 0 to 5 scale.

D. Contractor Quality Control during Construction:

1. Perform adhesion testing per ASTM D3359, Measuring Adhesion by Tape, Method A. Minimum adhesion rating of 5A is required on 0 to 5 scale.
2. Verify total dry film thickness of coating is as specified using dry film gauge. Measurements shall be taken at random time intervals a minimum of three times, daily. Additional measurements shall be taken where worked is performed on multiple Sectors on the same day and as requested by Engineer.
3. Check coating for film characteristics or defects that would adversely affect performance or appearance.
4. Correct nonconforming work.

1.05 DELIVERY, STORAGE AND HANDLING:

A. Comply with manufacturer’s ordering instructions and lead-time requirements to avoid construction delays.

B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Storage:

1. Store tightly sealed materials off ground and away from moisture, direct sunlight, extreme heat, and freezing temperatures.
2. Store materials in a clean, dry area indoors and in accordance with manufacturer's instructions.
3. Store materials within temperature range in accordance with manufacturer's instructions.
4. Keep containers sealed until ready for use.
5. Do not use materials after manufacturer's use before date.

D. Protect materials from damage and contamination during handling and application.

1.06 PROJECT CONDITIONS:

A. Environmental Requirements:

1. Ensure that substrate surface and ambient air temperature are minimum 40 degrees F and rising and maximum 120 degrees F at application time and remain above 40 degrees F at least 24 hours after application. Ensure that frost or frozen surfaces are thawed and dry.
2. Allow surfaces to attain temperature and conditions specified before proceeding with coating system application. Ensure a minimum of 2 hours of adequate

temperature and humidity remain before start of nightfall or inclement weather, before applying coating.

3. Do not apply coating to surfaces that are wet, damp, or contain frost.
4. Do not apply material if snow, rain, fog, and mist are anticipated within 12 hours after application.
5. Do not spray coating in winds above 15 mph.

1.07 WARRANTY

A. Provide manufacturer's standard warranty against defects of materials for twenty years, beginning with date of substantial completion of the project.

B. Installer's Guarantee: Contractor's two year warranty on their company letterhead using sample contained in Section 01 77 00-Closeout Procedures.

1. Contractor will be required to attend a Post-Construction field inspection no earlier than twenty- three months and no later than twenty-four months after the Date of Substantial Completion and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Whenever a particular make of material, trade name and/or manufacturer's name is specified herein, it shall be regarded as being indicative of the minimum standard of quality and performance characteristics required. Specific manufacturer's requirements in regards to preparation, application, etc. shall be followed if differing from the specified requirements.

B. Other manufacturers shall comply with minimum levels of material, color selection, and detailing indicated in Specifications or on Drawings. Engineer will be sole judge of appropriateness of substitutions.

2.02 MATERIALS:

A. Coating

1. One-component, elastomeric, silicone, high-solids, UV resistant, waterproofing coating with clear finish designed for use over exterior vertical concrete masonry. Basis of design:

    a. GE SEC2401 SilShield Optic Silicone Elastomeric Architectural Coating by Momentive Performance Materials

2. Properties as supplied:

    a. Specific Gravity, WPSTM P-15: 8.17 lb/gal (0.97 g/ml).
    b. Solids Content, By Volume, WPSTM C 19: 73 percent.
    c. Solids Content, By Weight, WPSTM C 19: 70 percent.
    d. Tack-Free Time, WPSTM E 86: 2 hours.
    e. Skin-Over Time: 30 minutes.
    f. Viscosity, WPSTM C 560: 10,400 centipoise.
    g. Volatile Organic Content (VOC), EPA Method 24: 238 g/L.

3. Cured Properties:

a. Tensile Strength, ASTM D412: 148 psi.
b. Elongation, ASTM D412: 205 percent.
c. Vapor Permeance (10 mils DFT), ASTM E96: 13.5 perms.
d. Color: Clear

B. Primer: Compatible with surfaces and coating and approved by manufacturer of coating.

PART 3 EXECUTION

3.01 EXAMINATION:

A. Coordinate work with other work for correct sequencing of items which make up the entire system.

3.02 SURFACE PREPARATION:

A. Prepare surfaces in accordance with manufacturer's requirements.

B. Protect adjacent Work areas and finish surfaces from damage during coating system application.

C. Protect plants and vegetation from exposure or provide with positive protection from overspray or misapplication of coating.

D. Ensure that substrate is sound, clean, dry, and free of dust, dirt, rust, oils, grease, laitance, efflorescence, mildew, fungus, biological residues, chemical contaminants, and other contaminants that could prevent proper adhesion.

E. Clean surface by using high-pressure waterblasting with or without abrasives added to water stream, to achieve surface with texture similar to 100 grit sandpaper.

F. Some stains and surface contaminants may require chemical removal. When chemical cleaners are used, neutralize compounds and fully rinse surface with clean water and as required by manufacturer. Allow surface to dry before proceeding.

G. Ensure area being repaired is structurally sound and fully cured.

H. Remove blisters and loose or delaminated areas.

I. Sand or grind edges of previous coating to ensure adhesion and smooth transition to new material. Sand edges to featheredge.

J. Wash down prepared surfaces and allow to completely dry.

K. Concrete Surfaces:

1. In addition to laitance and contaminants, remove form-release agents or previously applied sealers.
2. Remove form tie wires and repair holes, small voids, and spalls using appropriate repair product approved by coating manufacturer.

3. Abrasive-blast slick, dense concrete surfaces or use primer approved by coating manufacturer. Test surface for proper adhesion as specified in Part 1-Quality Assurance.

L. Brick and Concrete Masonry Unit Surfaces:

1. Remove fins and mortar droppings. Ensure mortar joints are sound and free of voids and cracks.
2. All gaps, cracks, or voids greater than hairline width, approximately 1/16-inch, must be ground out and patched with an appropriate masonry patching compound. Structural cracks of any thickness must be repaired and stabilized to prevent movement. Repoint or fill voids with appropriate patching product approved by manufacturer.
3. Apply primer as required by coating manufacturer.

M. Existing Acrylic Coating Surfaces:

1. Sand or grind edges of existing coating to ensure adhesion and smooth transition of new material. Sand edges of area to featheredge.
2. Wash down and allow to completely dry.

N. Chalky Surfaces: Treat chalky surfaces, as defined by ASTM D4214, Test Method A, with water cleaning and application of primer approved by coating manufacturer.

3.03 DETAIL PREPARATION

A. Replace existing sealant with specified sealant where indicated on Contact Drawings. Ensure there is no deteriorated sealant, adhesion loss, or non-elastomeric caulking in joints. Allow sealant to cure before proceeding.

B. Properly clean joints where dissimilar substrates join, i.e. stucco and concrete or brick and CMU, and seal with specified sealant.

C. Cracks smaller than hairline shall be bridged with knife-grade or brush-grade patching compounds.

D. Chip or grind out nonmoving cracks larger than hairline. Remove dust and pack with knife-grade patching compound. Bridge crack with brush-grade patching compound. Brush narrow band directly into crack using brush, sponge, or other means to match substrate texture and reduce telegraphing of patches through finish coat. On textured substrates, use texturized patching compound to minimize telegraphing.

E. Rout out dynamic or moving cracks to minimum of 1/4 inch by 1/4 inch, then fill with sealant approved by coating manufacturer. Once sealant is tooled and cured, proceed with crack repair as described previously.

3.04 PRIMING

A. Use primer where recommend by coating manufacturer. Ensure that primer for proper adhesion of coating material can bind existing surfaces or paint. Adhesion testing is specified in Part 1.

B. Apply primers or block fillers acceptable to coating material manufacturer.

C. Ensure CMU and other porous surfaces are clean, dry, and free of contaminants. Fill CMU faces with block filler and back roll to eliminate pinholes. Apply by working material into pores, crevices, and voids. Allow block filler to dry before proceeding, typically 24 to 48 hours. Coverage rate depends on porosity and texture of CMU surface. Apply to dry, cured CMU and mortar only.

D. Special substrates, such as insulated wall systems, may require different primer system. Contact coating manufacturer for specific recommendation.

E. Allow primer to dry before applying coating.

3.05 APPLICATION

A. General:

1. Coating can be applied using rollers, brushes or power rollers,.

    a. For uniformity of color and texture, use consistent application techniques throughout Project.

2. Apply uniform, pinhole-free coating in two separate coats at spreading rate required to achieve a total dry film thickness of 0.010 inch (10 mils). Apply coating in accordance with manufacturer's instructions at locations indicated on the drawings.
3. Apply at a wet thickness of 0.006 to 0.007 inches (6 - 7 mils WFT) per coat.
4. Apply second coat when the first coat is tack free to the touch.
5. Do not dilute coating.
6. Ensure silicone sealants to be coated are fully cured and clean.

B. Brush Application:

1. Application by brush is recommended only for small inaccessible areas such as touch-ups.
2. Use brush material recommended by coating manufacturer.

C. Roller Application:

1. Use roller where and of material recommended by coating manufacturer.
2. Completely saturate roller and keep it loaded with coating to build required mils. Never dry roll.
3. Roll coating in consistent fanlike pattern to achieve uniform mil thickness.
4. Cross roll to achieve uniform thickness and maintain wet edge. Backroll material in one direction.

3.06 CURING

A. Protect applied coating from rain or damage until fully cured.

3.07 CLEANING

A. Clean up and properly dispose of debris remaining on Project site related to application.

B. Remove temporary coverings and protection from adjacent Work areas and areas not in contract.

C. Remove misapplied coatings.

D. Repair or replace surfaces damaged by overspray or misapplied coating as determined by Engineer.

END OF SECTION 09 97 23

DIVISION 26 ELECTRICAL

SECTION 26 41 00

LIGHTNING PROTECTION SYSTEMS REINSTALLATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Furnish equipment, labor, materials and supervision to perform removal and replacement as required for the completion of a functional and unobtrusive lightning protection and facility grounding system and as required to achieve Project Record Documents specified.

B. Testing: Contractor to perform all testing required for certification of the new lightning protection system.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:

1.	Preparation for Reroofing	Section 07 01 50
2.	Fluid Applied Water Repellent	Section 07 19 00
3.	Modified Bitumen Roofing	Section 07 52 16
4.	Sheet Metal Flashing and Trim	Section 07 62 00
5.	Elastomeric Joint Sealants	Section 07 92 00

1.03 REFERENCES

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

1. Institute of Electrical and Electronics Engineers, Inc. (IEEE) 81 - 1983 Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Potentials of a Ground System
2. National Fire Protection Association (NFPA):
    a. NFPA 70 - 1990 National Electrical Code
    b. NFPA 780 - 2014 Lightning Protection Code
3. Underwriters Laboratories (UL)
    a. UL 03 - 1990 Electrical Construction Materials Directory
    b. UL 96 - 2005 (R 2010) Lightning Protection Components, Fifth Edition
    c. UL 96A - 2007 (R 2014) Installation Requirements for Lightning Protection System, Twelfth Edition
    d. UL 467 - 1984 (R 1986) Grounding and Bonding Equipment, Sixth Edition
4. Lightning Protection Institute (LPI) Standard #175

1.04 RELATED REQUIREMENTS

A. Verification of Dimensions: The Contractor shall become familiar with all details of the

work, verify all dimensions in the field prior to bid, and shall advise the Engineer of any discrepancy before the bid and performing the work. No departures shall be made without the prior approval of the Engineer.

1.05 SUBMITTALS

A. Refer to Section 01 33 00-Submittals.

B. Shop Drawings:

1. Manufacturer's approved shop drawings shall include installation or reinstallation details of all lightning protection system replacement parts and/or components.
2. Detailed roof plan, and if necessary building plan, drawn to scale depicting all existing components to be removed and reinstalled, and location of components.

C. Product Data and Samples: After award of contract, submit:

1. Complete material list of all items proposed to be furnished and installed under this section.
2. Manufacturer's complete literature and specifications for installation of the replacement components.
3. Manufacturer's certification that proposed reinstallation of the existing lightning protection system will meet all UL requirements.
4. Manufacturer's complete literature and specifications for adhesives used to secure lightning protection system components to new roof or other surfaces.

D. Material Safety Data Sheets (MSDS) for all products specified under this section.

1.06 QUALITY ASSURANCE

A. Standards: Comply with the standards specified in this section and as listed in the general requirements.

B. Qualifications of the Manufacturer: Products used in this work included in this section shall be produced by manufacturers regularly engaged in the manufacturing of similar items and with a five (5) year history of successful production and product installation.

C. Qualifications of the Contractor: The contractor shall be previously and currently approved by the lightning protection system manufacturer for the application of the products to be installed under this section of the specification. The contractor shall also have a minimum of three years of experience as an approved applicator with the manufacturer. The applicator shall supply the names and locations of 5 projects of similar size and scope that he has constructed within the previous three years.

1. The installing contractor shall have an LPI Certified Master Installer/Designer on staff.
2. The installing contractor shall have LPI Journeyman and Master Installers on-site to complete the actual installation.
3. Participate in UL's "Alternate Quality Management System Inspection Program."

D. Qualifications of the Installers: Installers shall be thoroughly trained and experienced in the crafts necessary to properly install all the products specified under this section. Installers shall be made familiar with any and all unique requirements specified for

proper performance of the work in this section.

E. Inspections: Cooperate and coordinate with inspectors, testing agencies and manufacturers, in order to facilitate inspection of the installation to include allowance for field sampling.

F. Rejection: In the acceptance or rejection of work specified in this section, no allowance will be made for the lack of skill or specification understanding on the part of the workmen. It shall be incumbent upon the contractor to use adequate numbers of skilled installers and to instruct them in the requirements of the project specifications, as well as, maintaining a complete set of project specifications and drawings on the roof at all times.

G. Replacement: In the event inadequate or improper reinstallation is determined, the contractor shall make all repairs and replacements required to render the installation compliant with the project specifications. Replacement, due to improper performance, shall be made at the sole cost of the contractor.

H. The materials, equipment or devices furnished under this contract shall meet the requirements of all applicable Underwriters Laboratories (UL) Standards. The label of, or listing by, Underwriters Laboratories will be accepted as conformance with this requirement. In lieu of said UL label or listing, the contractor shall submit to the Engineer, within fifteen (15) calendar days from the date of his receipt of a copy of the executed contract, a report prepared by an alternate independent testing agency verifying that said materials, equipment or devices conform to the aforesaid applicable UL requirements, as a result of tests performed in accordance with UL test methods and procedures. The said alternate independent testing agency shall be acceptable to the Engineer.

1.07 PRE-INSTALLATION CONFERENCE

A. Refer to Specification Section 01 31 00-Project Management and Coordination

1.08 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Where applicable, materials shall be delivered to the site in the manufacturer's original, sealed and labeled containers or wrappings; and in sufficient quantities to provide for continuous installation progress without disruption or delay to the project due to lack of materials on site.

B. Storage: Materials shall be stored out of direct exposure to the elements and shall be stored on pallets or other storage supports, a minimum of 6 inches above the roof or ground surface. All materials shall be covered with canvas tarps. or fitted synthetic tarp. like covers.

1. If materials are to be stored on the roof, they shall be sufficiently distributed around the roof perimeter or over load bearing supports to prevent over stressing the roof deck.
2. Polyethylene sheets are not an acceptable tarpaulin material.
3. Prior to leaving the job site, daily, tarps. are to be secured at all edges to immovable objects and anchored sufficiently to prevent blow-off or dislocation.

C. Materials shall be handled in such a manner as to preclude damage.

D. Replacement: In the event of damage from delivery, storage, or handling of materials

under this section of the specification, immediately replace deficient materials. Any installation of damaged materials shall be immediately removed and replaced. Replacement of damaged or improperly installed materials shall be at the sole cost of the contractor.

1.09 WARRANTY

A. Installer's Two Year Warranty: Contractor's two year warranty on their company letterhead using sample contained in Section 01 77 00-Closeout Procedures.

1. Contractor will be required to attend a Post-Construction field inspection no earlier than twenty- three months and no later than twenty-four months after the Date of Substantial Completion and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner..

PART 2 PRODUCTS

2.01 LIGHTNING PROTECTION SYSTEM COMPONENTS

A. General: Contractor shall use materials and components for installation and re-attachment of the lightning protection system that will match the existing in types, sizes, ratings, for Class of service, which comply with manufacturer's standard materials, design, and construction in accordance with published product information, and as required to provide a complete installation. Where the type of components or materials are not otherwise indicated, comply with NFPA 78 and LPI standards.

2.02 COMPONENTS

A. It is the responsibility of the Contractor to become familiar with all details of the work and to verify all dimensions and existing conditions in the field prior to bid. Contractor shall advise the Engineer of any discrepancy prior to the bid and before performing the work. No departures shall be made without the prior approval of the Engineer.

1. Class I materials shall be used for systems on structures not exceeding 75-feet in height and Class II materials shall be used for systems on structures exceeding 75-feet above finished grade.
2. Lightning Protection materials shall be coordinated with building construction materials to assure compatibility. Aluminum lightning protection materials shall not be embedded in concrete or masonry, installed on or below copper surfaces, or used for the in-ground system. Copper lightning protection materials shall not be installed on aluminum surfaces or on exterior sheet metal surfaces. Copper components within 2-feet of chimney exhausts shall be tin coated to protect against deterioration.

B. Conductors:

1. Class I:

   a. Bare standard copper cable, 29 strands of 16 gage, 59,450 cm., 192 pounds per thousand feet.
   b. Bare standard aluminum cable, 24 strands of 14 gage, 98,640 cm., 102 pounds per thousand feet.

2. Class II:

a. Bare standard copper cable, 28 strands of 14 gage, 115,080 cm., 380 pounds per thousand feet.
b. Bare standard aluminum cable, 37 strands of 12-1/2 gage, 211,000 cm., 204 pounds per thousand feet.

C. Air Terminals: Air Terminals extend not less than 10” above the object they are to protect.

1. Class I:

a. Nickel plated copper, 3/8” in diameter with tapered points.
b. Aluminum, 1/2" in diameter with tapered points.

2. Class II:

a. Nickel plated copper, ½" in diameter with tapered points.
b. Aluminum, 5/8” in diameter with tapered points.

D. Fasteners, Clamps & Connectors:

1. Fasteners, Clamps & Connectors as required by the lightning protection component manufacturer.
2. Roof Manufacturer approved straps or appropriate adhesive supports and construction adhesive may be used on membrane roof surfaces only.

E. Ground rods: 3/4" in diameter by 10' in length made of copper clad steel.

PART 3 EXECUTION

3.01 GENERAL

A. The installation shall comply with the requirements of NFPA 780, UL 96A, LPI 175, and the NEC.

B. All efforts will be coordinated to prevent moisture infiltration into the facility, the existing roof assembly, or the newly installed roof system.

C. Manufacturer's details and recommendations will be followed for the installation and connection of the lightning protection system.

3.02 VERIFICATION OF CONDITIONS

A. Ensure that the following conditions exist prior to the reinstallation of the lightning protection system.

1. All metal roof panels, drains, curbs, cants, expansion joints, perimeter walls, roof penetrating components, and equipment supports are in place.
2. Surfaces are thoroughly clean of all dirt, debris, other foreign matter, and are rigid, dry, smooth, and are free from standing water, frost and snow and are acceptable to the manufacturer of the lightning protection system for reinstallation of the components of the lightning protection system.

3.03 PREPARATION

A. Coordinate the work with other trades to assure that all roof work is completed prior to permanent reinstallation of the lightning protection system.

3.04 REMOVAL

A. Contractor shall carefully disconnect and remove existing parts and components of the existing lightning protection system so that these parts and components can be reused. Any parts or components damaged during the removal process will be replace with new products that match the existing in size, shape, configuration, material, attachment and manufacturer.

B. Contractor shall remove only as much of the existing lightning protection system as is necessary to accommodate proper and complete application of the new roof system.

3.05 INSTALLATION

A. Mounting and roof penetrating components shall be secured and flashed per the requirements of Section 07 52 16 and Section 07 62 00 and as required for inclusion in the specified membrane manufacturer's warranty.

B. Reinstallation of existing parts and components or installation of new parts, materials and components of the lightning protection system shall be done by a firm regularly engaged and experienced in the installation of Master Labeled lightning protection systems and shall be listed with the Underwriters' Laboratories, Inc.

C. Reinstallation of existing parts, materials and components will match the original in location and attachment.

D. Where required to replace original components, parts and/or materials; installation of new components, parts and/or materials will match the original installation in location and attachment.

E. If necessary, conductors will be reinstalled with direct paths from air terminals to ground connections avoiding sharp bends and narrow loops.

F. If necessary, reinstall arresters as close as practical to equipment they are protecting.

G. All vertical downlead conductors shall be run in 1 inch schedule 80 PVC conduit. Bends in conduit shall be kept to a minimum and where used shall have an angle not to exceed 90 degrees.

3.06 INSPECTION

A. Perform inspections of the lightning protection system installation in accordance with Lightning Protection Institute Inspection guide LPI-177, "Inspection Guide for LPI Certified Systems." Provide the Engineer with one copy of the inspection guide booklet LPI-177 and retain one copy at the project site for reference.

B. Document the inspections on LPI forms LPI-C1-02 and LPI form 1-R88. Provide one copy of each completed form to the Engineer.

3.07 TESTING

A. Upon completion of installation of lightning protection system, test resistance-to-ground

with resistance tester. Where tests show resistance-to-ground is over 5 ohms, take appropriate action to reduce resistance to 5 ohms, or less, by driving additional ground rods with sodium chloride, copper sulphate, or magnesium. Then retest to demonstrate compliance.

3.08 CLEAN UP

A. Remove all debris and unnecessary roof related materials from the finished roof area.

B. Leave job site absolutely clean at completion of work and properly dispose of all construction debris.

3.09 VERIFICATION

A. Upon completion of the installation in each area visually inspect and verify that all components are complete and properly installed so that the roof system is defect-free and in a watertight condition. Verify that fasteners are properly located and securely anchored.

3.10 PROJECT RECORD DOCUMENTS

A. Upon completion of the lightning protection system installation, provide written certification the lightning protection system has been installed in accordance with the project specifications and drawings, and any approved contractor submitted shop drawings.

B. Final System Inspection and Quality Control

1. The contractor shall furnish an LPI-IP Certificate and UL Master Label Certificate upon completion of the installation.
2. The contractor shall furnish a 10-Year Adhesion Warranty on the VFC Z-Pen Fastener System.
3. As-Built Drawings shall be completed and stamped by an LPI Certified Master Installer/Designer.
4. Final Inspection Reports: A final test and inspection report shall be completed based on ANSI/TIA/EIA 607, NEC, NFPA 780, and UL 96A industry standards as applicable. The scope of the inspection and report shall include:

    a. Evaluation and testing of the grounding system. Record final systems to ground resistance level.
    b. Evaluation and testing of the internal bonding and grounding systems.
    c. Evaluation and testing of equipment grounding.
    d. Evaluation of AC surge suppression installation.
    e. Evaluation of telco surge suppression installation.
    f. Copy of the LPI-IP and UL Certification.
    g. Final As-Built Review and Submission.

5. Reports shall include detailed reporting and test results with corresponding photos of each evaluation category.

C. Submit copies of all test results.

D. The contractor shall submit as-built scale drawings depicting all installation details used and their location on the roof. This information shall be submitted on paper suitable for

blue-line reproduction.

END OF SECTION 26 41 00