PROJECT MANUAL

FOR

PARKING GARAGE 1
WATERPROOFING AND MASONRY REPAIRS
MEDICAL UNIVERSITY OF SOUTH CAROLINA
97 JONATHAN LUCAS STREET
CHARLESTON, SC

STATE PROJECT NO. H51-N329-PG

March 23, 2015

PREPARED BY:

FORSBERG ENGINEERING
& SURVEYING, INC.
P.O. BOX 30575
CHARLESTON, SOUTH CAROLINA 29417
(843)571-2622 FAX (843)571-6780
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INVITATION FOR CONSTRUCTION SERVICES

PROJECT NAME: PARKING GARAGE 1 WATERPROOFING AND MASONRY REPAIRS

PROJECT NUMBER: H51-N329-PG

PROJECT LOCATION: 97 JONATHAN LUCAS STREET, CHARLESTON, SC 29425

BID SECURITY REQUIRED? Yes ☒ No ☐ NOTE: Contractor may be subject to a performance appraisal at the close of the project.

PERFORMANCE BOND REQUIRED? Yes ☒ No ☐

PAYMENT BOND REQUIRED? Yes ☒ No ☐ CONSTRUCTION COST RANGE: $700,000 to 900,000

DESCRIPTION OF PROJECT: Repair of interior concrete surfaces, interior and exterior masonry walls, structural steel due to corrosion and damage from water intrusion; repair/replacement of exterior brick façade; roofing repairs and building envelope waterproofing improvements of top two floors of a multi-story parking garage structure.

BIDDING DOCUMENTS/PLANS MAY BE OBTAINED FROM:
http://academicdepartments.musc.edu/vpfa/eandf/construction_projects/index.html

PLAN DEPOSIT AMOUNT: $ 50.00 IS DEPOSIT REFUNDABLE Yes ☐ No ☐ N/A ☒

Bidders must obtain Bidding Documents/Plans from the above listed source(s) to be listed as an official plan holder. Only those Bidding Documents/Plans obtained from the above listed source(s) are official. Bidders that rely on copies of Bidding Documents/Plans obtained from any other source do so at their own risk. All written communications with official plan holders & bidders WILL ☒ WILL NOT ☐ be via email or website posting.

IN ADDITION TO THE ABOVE OFFICIAL SOURCE(S), BIDDING DOCUMENTS/PLANS ARE ALSO AVAILABLE AT:

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

A-E NAME: Forsberg Engineering & Surveying, Inc.

A-E CONTACT: Gray M. Lewis, PE

A-E ADDRESS: Street/PO Box: P.O. Box 30575
City: Charleston
State: SC ZIP: 29417-0575

EMAIL: gmlewis@forsberg-engineering.com

TELEPHONE: (843) 571-2622 FAX: (843) 571-6780

AGENCY: Medical University of South Carolina

AGENCY PROJECT COORDINATOR: Wade Gatlin, AIA : MUSC Engineering & Facilities

ADDRESS: Street/PO Box: 97 Jonathan Lucas Street, MSC 190
City: Charleston
State: SC ZIP: 29425-1900

EMAIL: gatlin@musc.edu

TELEPHONE: (843) 792-2233 FAX: (843) 792-1252

PRE-BID CONFERENCE: Yes ☒ No ☐ MANDATORY ATTENDANCE: Yes ☐ No ☒

PRE-BID DATE: 4/9/2015 TIME: 3:30 PM PLACE: 97 Jonathan Lucas Street, Conference Room #219

BID CLOSING DATE: 4/28/2015 TIME: 3:00 PM PLACE: 97 Jonathan Lucas Street, Conference Room #219

BID DELIVERY ADDRESSES:

HAND-DELIVERY:

Attn: Wade Gatlin
MUSC Engineering & Facilities Conference Room #219
97 Jonathan Lucas Street, Charleston, SC 29425

MAIL SERVICE:

Attn: Wade Gatlin
97 Jonathan Lucas Street, MSC 190
Charleston, SC 29425-1900

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

APPROVED BY: (OSE Project Manager) DATE: 4/1/15
AIA DOCUMENT A701 – 1997
Instruction to Bidders

The AIA A701 is not included in this digital version of the Project Manual. The original document will be provided in printed versions only.

Contractors printing from the digital version can view the original document at the office of the AE:

Forsberg Engineering & Surveying Inc.
1587 Savannah Hwy.-Suite B
Charleston, SC 29407
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
OSE FORM 00201
STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of bids; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are not presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in paragraph (a)(1)(i)(B) of this provision.

(ii) Bidder has not, within a three-year period preceding this bid, had one or more contracts terminated for default by any public (Federal, state, or local) entity.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

(b) Bidder shall provide immediate written notice to the Procurement Officer if, at any time prior to contract award, Bidder learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) If Bidder is unable to certify the representations stated in paragraphs (a)(1), Bid must submit a written explanation regarding its inability to make the certification. The certification will be considered in connection with a review of the Bidder's responsibility. Failure of the Bidder to furnish additional information as requested by the Procurement Officer may render the Bidder nonresponsible.

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

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

2.5 ETHICS CERTIFICATE

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

2.6 RESTRICTIONS APPLICABLE TO BIDDERS & GIFTS

Violation of these restrictions may result in disqualification of your bid, suspension or debarment, and may constitute a violation of the state Ethics Act. (a) After issuance of the solicitation, bidder agrees not to discuss this procurement activity in any way with the Owner or its employees, agents or officials. All communications must be solely with the Procurement Officer. This restriction may be lifted by express written permission from the Procurement Officer. This restriction expires once a contract has been formed. (b) Unless otherwise approved in writing by the Procurement Officer,
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.scmd.org/scgovweb/weather_alert.html

2.17. In Section 4.1.1, delete the word “forms” and substitute the words “SE-330 Bid Form.”

2.18. Delete Section 4.1.2 and substitute the following:

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

2.19. Delete Section 4.1.3 and substitute the following:

4.1.3 Sums shall be expressed in figures.

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

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

2.21. Delete Section 4.1.5 and substitute the following:

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

2.22. Delete Section 4.1.6 and substitute the following:

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

2.23. Delete Section 4.1.7 and substitute the following:

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

2.24. Delete Section 4.2.1 and substitute the following:

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

5.2.1 In Section 5.2, insert the section number “5.2.1” before the words of the “The Owner” at the beginning of the sentence.

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.

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.

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]

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.

7.1.3 Delete the language of Section 7.1.3 and insert the word “Reserved.”

7.2 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
OSE FORM 00201

STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

secret or protected, the State may, in its sole discretion, determine it nonresponsive. If only portions of a page are subject to some protection, do not mark the entire page. By submitting a response to this solicitation, Bidder (1) agrees to the public disclosure of every page of every document regarding this solicitation or request that was submitted at any time prior to entering into a contract (including, but not limited to, documents contained in a response, documents submitted to clarify a response, & documents submitted during negotiations), unless the page is conspicuously marked "TRADE SECRET" or "CONFIDENTIAL" or "PROTECTED", (2) agrees that any information not marked, as required by these bidding instructions, as a "Trade Secret" is not a trade secret as defined by the Trade Secrets Act, & (3) agrees that, notwithstanding any claims or markings otherwise, any prices, commissions, discounts, or other financial figures used to determine the award, as well as the final contract amount, are subject to public disclosure. In determining whether to release documents, the State will detrimentally rely on Bidders's marking of documents, as required by these bidding instructions, as being either "Confidential" or "Trade Secret" or "PROTECTED". By submitting a response, Bidder agrees to defend, indemnify & hold harmless the State of South Carolina, its officers & employees, from every claim, demand, loss, expense, cost, damage or injury, including attorney’s fees, arising out of or resulting from the State withholding information that Bidder marked as "confidential" or "trade secret" or "PROTECTED".

9.4 POSTING OF INTENT TO AWARD

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

Room or Area of Posting: Room 203
Building Where Posted: MUSC Parking Garage 1
Address of Building: 97 Jonathan Lucas Street- Charleston, SC 29425
WEB site address (if applicable): ______
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
Operational use of the existing parking garage structure must be maintained. Demolition and repair of the existing garage must be scheduled and phased in such a way that garage operations continue with the least possible interruption, and floors not being repaired or modified will remain operational. All work affecting such operations must be approved and coordinated with the MUSC Office of Parking Management.

END OF DOCUMENT
AIA Document A310 - 2010

Bid Bond

CONTRACTOR:       SURETY:

OWNER: MEDICAL UNIVERSITY OF SOUTH CAROLINA
    171 ASHLEY AVENUE
    CHARLESTON, SC   29401

BOND AMOUNT:

PROJECT:    PARKING GARAGE 1 WATERPROOFING AND MASONRY REPAIRS
    97 JONATHAN LUCAS STREET, CHARLESTON, SC   29403
    STATE PROJECT NO.: H51-N329-PG

The original AIA A310 is not included. The above information is for the Contractor’s use in filling out the Bid Bond Form.
SE-330 – LUMP SUM BID

BID FORM

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

BID SUBMITTED BY: ________________________________.

(Bidder’s Name)

BID SUBMITTED TO: Medical University of South Carolina

(Owner’s Name)

FOR PROJECT: PROJECT NAME Parking Garage 1 Waterproofing and Masonry Repairs

PROJECT NUMBER H51-N329-PG

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): All work associated with the structural and masonry repairs and waterproofing of roof and building envelope and associated work on MUSC Parking Gargae 1 located at 97 Jonathan Lucas Street, Charleston, SC, and as indicated in the project construction drawings; and as specified in the Project Manual.

______________________________, which sum is hereafter called the Base Bid.

(Bidder - insert Base Bid Amount on line above)
§ 6.2 BID ALTERNATES - as indicated in the Bidding Documents and generally described as follows:

**ALTERNATE # 1 (Brief Description):** Phasing of the 6th floor level to permit simultaneous parking and repair work.

[ ] ADD TO or [ ] DEDUCT FROM BASE BID: ____________________________

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

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

[ ] ADD TO or [ ] DEDUCT FROM BASE BID: ____________________________

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

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

[ ] ADD TO or [ ] DEDUCT FROM BASE BID: ____________________________

(Bidder to Mark appropriate box to clearly indicate the price adjustment offered for each alternate)
Bidder shall use the below-listed Subcontractors in the performance of the Subcontractor Specialty work listed:

<table>
<thead>
<tr>
<th>SUBCONTRACTOR'S SPECIALTY</th>
<th>SUBCONTRACTOR'S PRIME CONTRACTOR'S NAME</th>
<th>SUBCONTRACTOR'S PRIME CONTRACTOR'S SC LICENSE NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Completed by Owner)</td>
<td></td>
</tr>
</tbody>
</table>

**BASE BID**

**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 $500.00 for each calendar day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted time for Substantial Completion as provided in the Contract Documents. This sum is intended by the parties as the predetermined measure of compensation for actual damages, not as a penalty for nonperformance.

§ 10. AGREEMENTS

a. Bidder agrees that this bid is subject to the requirements of the law of the State of South Carolina.

b. Bidder agrees that at any time prior to the issuance of the Notice to Proceed for this Project, this Project may be canceled for the convenience of, and without cost to, the State.

c. Bidder agrees that neither the State of South Carolina nor any of its agencies, employees or agents shall be responsible for any bid preparation costs, or any costs or charges of any type, should all bids be rejected or the Project canceled for any reason prior to the issuance of the Notice to Proceed.

§ 11. ELECTRONIC BID BOND

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

Electronic Bid Bond Number: ______________________

Signature and Title: _______________________________
BIDDER'S TAXPAYER IDENTIFICATION

FEDERAL EMPLOYER'S IDENTIFICATION NUMBER: ______________________

OR

SOCIAL SECURITY NUMBER: ______________________

CONTRACTOR'S CLASSIFICATIONS AND SUBCLASSIFICATIONS WITH LIMITATIONS

Classification(s) & Limits: ______________________

Subclassification(s) & Limits: ______________________

SC Contractor's License Number(s): ______________________

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

SIGNATURE

BIDDER'S LEGAL NAME: ______________________

ADDRESS: ______________________

____________________________

BY: ______________________ DATE: __________

(Signature)

TITLE: ______________________

TELEPHONE: ______________________

EMAIL: ______________________
**Unit Prices Attachment**

**Project Name:** Parking Garage 1 Waterproofing and Masonry repairs  
**State Project Number:** H51-N329-PG

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

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Base Bid Qty</th>
<th>Unit of Measure</th>
<th>ADD Cost per Unit</th>
<th>DEDUCT Cost per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Epoxy Crack Repair (Greater than 1/16&quot;)</td>
<td>600</td>
<td>LF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Concrete Repair (1&quot; deep)</td>
<td>5</td>
<td>SF</td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td>Concrete Repair (2&quot; deep)</td>
<td>5</td>
<td>SF</td>
<td></td>
<td></td>
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<tr>
<td>4.</td>
<td>Masonry Replacement</td>
<td>100</td>
<td>SF</td>
<td></td>
<td></td>
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<tr>
<td>5.</td>
<td>2 x Nailers (at top of wall)</td>
<td>500</td>
<td>LF</td>
<td></td>
<td></td>
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<tr>
<td>6.</td>
<td>Column penetration flashing</td>
<td>27</td>
<td>EA</td>
<td></td>
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<tr>
<td>7.</td>
<td>Perimeter Joint Caulking</td>
<td>600</td>
<td>LF</td>
<td></td>
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<tr>
<td>8.</td>
<td>Metal Floor Deck cleaning/repair</td>
<td>850</td>
<td>SF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Steel Framing cleaning, painting</td>
<td>850</td>
<td>SF</td>
<td></td>
<td></td>
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<tr>
<td>10.</td>
<td>“H” beam repair</td>
<td>38</td>
<td>LF</td>
<td></td>
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<tr>
<td>11.</td>
<td>Col. G5, G6 repair</td>
<td>15</td>
<td>LF</td>
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<td>12.</td>
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<td>18.</td>
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<td>19.</td>
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</tbody>
</table>

**Notes:**

1. Please provide an “Add” and “Deduct” price per unit.
2. Quantities listed above are to be included in the Base Bid.
Two Thousand and fifteen

MEDICAL UNIVERSITY OF SOUTH CAROLINA
171 ASHLEY AVENUE
CHARLESTON, SC 29401

PARKING GARAGE 1 WATERPROOFING AND MASONRY REPAIRS
97 JONATHAN LUCAS STREET
CHARLESTON, SC 29425
STATE PROJECT NO.: H51-N329-PG

FORSBERG ENGINEERING & SURVEYING, INC.
P.O. BOX 30575
CHARLESTON, SC 29417

The Owner and Contractor agree as follows.
<table>
<thead>
<tr>
<th>TABLE OF ARTICLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. THE CONTRACT DOCUMENTS</td>
</tr>
<tr>
<td>2. THE WORK OF THIS CONTRACT</td>
</tr>
<tr>
<td>3. DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION</td>
</tr>
<tr>
<td>4. CONTRACT SUM</td>
</tr>
<tr>
<td>5. PAYMENTS</td>
</tr>
<tr>
<td>6. DISPUTE RESOLUTION</td>
</tr>
<tr>
<td>7. TERMINATION OR SUSPENSION</td>
</tr>
<tr>
<td>8. MISCELLANEOUS PROVISIONS</td>
</tr>
<tr>
<td>9. ENUMERATION OF CONTRACT DOCUMENTS</td>
</tr>
<tr>
<td>10. INSURANCE AND BONDS</td>
</tr>
</tbody>
</table>

**ARTICLE 1  THE CONTRACT DOCUMENTS**
The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

**ARTICLE 2  THE WORK OF THIS CONTRACT**
The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

**ARTICLE 3  DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION**

§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

(Insert the date of commencement if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

Date of Commencement as specified in the Notice-To-Proceed.

If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner’s time requirement shall be as follows:

§ 3.2 The Contract Time shall be measured from the date of commencement.
§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than ninety (90) days from the date of commencement, or as follows:
(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)

<table>
<thead>
<tr>
<th>Portion of the Work</th>
<th>Substantial Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Bid</td>
<td>90 days after Notice-to-Proceed</td>
</tr>
</tbody>
</table>

, subject to adjustments of this Contract Time as provided in the Contract Documents.
(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)

Liquidated Damages for failure to complete on-time: $500.00/ calendar day

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor’s performance of the Contract. The Contract Sum shall be Dollars ($ ), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:
(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

§ 4.3 Unit prices, if any:
(Identify and state the unit price; state quantity limitations, if any, to which the unit price will be applicable.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Units and Limitations</th>
<th>Price per Unit ($0.00)</th>
</tr>
</thead>
</table>

§ 4.4 Allowances included in the Contract Sum, if any:
(Identify allowance and state exclusions, if any, from the allowance price.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Price ($0.00)</th>
</tr>
</thead>
</table>

ARTICLE 5  PAYMENTS
§ 5.1 PROGRESS PAYMENTS
§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the Twenty-fifth day of a month, the Owner shall make payment of the certified amount to the Contractor not later than the Sixteenth day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than Twenty-one (21) days after the Architect receives the Application for Payment. (Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be 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.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

.1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of three and one-half percent (3.5%). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™–2007, General Conditions of the Contract for Construction;

.2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of Three and one-half percent (3.5%);

.3 Subtract the aggregate of previous payments made by the Owner; and

.4 Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201–2007.

§ 5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

.1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and

(Section 9.8.5 of AIA Document A201–2007 requires release of applicable retainage upon Substantial Completion of Work with consent of surety, if any.)

.2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201–2007.
§ 5.1.8 Reduction or limitation of retainage, if any, shall be as follows:
(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.6.1 and 5.1.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

§ 5.1.9 Except with the Owner’s prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 FINAL PAYMENT
§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when
1. the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Section 12.2.2 of AIA Document A201–2007, and to satisfy other requirements, if any, which extend beyond final payment; and
2. a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner’s final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect’s final Certificate for Payment, or as follows:

ARTICLE 6 DISPUTE RESOLUTION
§ 6.1 INITIAL DECISION MAKER
The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201–2007, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 BINDING DISPUTE RESOLUTION
For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A201–2007, the method of binding dispute resolution shall be as follows:
(Choose the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.)

☐ Arbitration pursuant to Section 15.4 of AIA Document A201–2007

☐ Litigation in a court of competent jurisdiction

☐ Other: (Specify)
ARTICLE 7 TERMINATION OR SUSPENSION
§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2007.

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2007.

ARTICLE 8 MISCELLANEOUS PROVISIONS
§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located. (Insert rate of interest agreed upon, if any.)

One percent (1.0%) per month, or pro-rata fraction thereof on the unpaid balance as may be due.

§ 8.3 The Owner’s representative:
(Name, address and other information)

§ 8.4 The Contractor’s representative:
(Name, address and other information)

§ 8.5 Neither the Owner’s nor the Contractor’s representative shall be changed without ten days written notice to the other party.

§ 8.6 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS
§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A101–2007, Standard Form of Agreement Between Owner and Contractor.

§ 9.1.2 The General Conditions are AIA Document A201–2007, General Conditions of the Contract for Construction.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

<table>
<thead>
<tr>
<th>Document</th>
<th>Title</th>
<th>Date</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE-330</td>
<td>Standard Bid Form (as submitted by the Contractor)</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>00501</td>
<td>OSE Standard Modification to AIA A101-2007</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>00811</td>
<td>Standard Supplementary Conditions</td>
<td></td>
<td>26</td>
</tr>
</tbody>
</table>

§ 9.1.4 The Specifications:
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Date</th>
<th>Pages</th>
</tr>
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<tbody>
<tr>
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</tbody>
</table>

Technical Specifications from the Project Manual and as listed on Attachment Exhibit A.

§ 9.1.5 The Drawings:
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Date</th>
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<tbody>
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</table>

All drawings included in the project construction drawing set and as listed on attached Exhibit B.

§ 9.1.6 The Addenda, if any:

<table>
<thead>
<tr>
<th>Number</th>
<th>Date</th>
<th>Pages</th>
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Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

.1 AIA Document E201™–2007, Digital Data Protocol Exhibit, if completed by the parties, or the following:

.2 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2007 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

ARTICLE 10 INSURANCE AND BONDS
The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201–2007.
(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201–2007.)

<table>
<thead>
<tr>
<th>Type of Insurance or Bond</th>
<th>Limit of Liability or Bond Amount ($0.00)</th>
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</tbody>
</table>
This Agreement entered into as of the day and year first written above.

OWNER (Signature)

CONTRACTOR (Signature)

(Printed name and title)

(Printed name and title)

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.
# EXHIBIT A

## LIST OF CONTRACT TECHNICAL SPECIFICATIONS

**PROJECT NUMBER:** H51-N329-PG  
**PROJECT NAME:** PARKING GARAGE 1 WATERPROOFING AND MASONRY REPAIRS

**TECHNICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>SECTION</th>
<th>TITLE</th>
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<tbody>
<tr>
<td><strong>Division 01 - General Requirements</strong></td>
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</tr>
<tr>
<td>01 11 00</td>
<td>Summary of the Work</td>
</tr>
<tr>
<td>01 21 10</td>
<td>Unit Prices and Allowances</td>
</tr>
<tr>
<td>01 25 00</td>
<td>Substitution Procedures</td>
</tr>
<tr>
<td>01 26 33</td>
<td>Changes in the Work</td>
</tr>
<tr>
<td>01 29 73</td>
<td>Schedule of Values</td>
</tr>
<tr>
<td>01 31 19</td>
<td>Project Meetings</td>
</tr>
<tr>
<td>01 32 16</td>
<td>Construction Progress Schedule</td>
</tr>
<tr>
<td>01 33 00</td>
<td>Submittal Procedures</td>
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<tr>
<td>01 50 00</td>
<td>Temporary Facilities and Controls</td>
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<td>01 71 23</td>
<td>Construction Stakeout and Field Engineering</td>
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<tr>
<td>01 73 29</td>
<td>Miscellaneous Cutting</td>
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<td>01 73 32</td>
<td>Miscellaneous Patching</td>
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<td>01 77 00</td>
<td>Closeout Procedures</td>
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<td>01 78 39</td>
<td>Project Record Documents</td>
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<table>
<thead>
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<th>Division 02 – Existing Conditions</th>
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<tbody>
<tr>
<td>02 04 03</td>
<td>Cutting and Patching for Building Envelope</td>
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<tr>
<td>02 05 03</td>
<td>Demolition and Removal for Building Envelope</td>
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<tr>
<td>02 82 03</td>
<td>Engineering Control of Asbestos Containing Materials</td>
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<table>
<thead>
<tr>
<th>Division 03 – Concrete</th>
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<tbody>
<tr>
<td>03 30 00</td>
<td>Cast-in-Place Concrete</td>
</tr>
<tr>
<td>03 90 03</td>
<td>Concrete Restoration for Top Deck</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Division 04 – Masonry</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>04 20 00</td>
<td>Unit Masonry</td>
</tr>
</tbody>
</table>
04 50 03  Masonry Replacement, Restoration and Cleaning

**Division 05 – Metals**
05 12 00  Structural Steel Framing

**Division 06 – Wood, Plastics, and Composites**
06 10 03  Rough Carpentry for Roofing

**Division 07 – Thermal and Moisture Protection**
07 14 03  Concrete Deck Coating for Vehicular Traffic
07 42 13.04  Metal Wall Panels, Perforated
07 55 03  Modified Bitumen Sheet Roofing System
07 60 03  Sheet Metal for Building Envelope and Fencing
07 91 03  Prefabricated Parking Garage Joints
07 92 03  Sealants for Building Envelope

**Division 08 – Openings**
(Not used)

**Division 09 – Finishes**
09 96 00  High Performance Coatings

**Division 10 – Division 31**
(Not Used)

**Division 32 – Exterior Improvements**
32 17 23  Pavement Markings
EXHIBIT B

LIST OF CONSTRUCTION CONTRACT DRAWINGS

PROJECT NUMBER: H51-N329-PG
PROJECT NAME: PARKING GARAGE 1 WATERPROOFING AND MASONRY REPAIRS

<table>
<thead>
<tr>
<th>Sheet</th>
<th>Drawing Title</th>
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<tbody>
<tr>
<td>T101</td>
<td>TITLE SHEET</td>
</tr>
<tr>
<td>S1</td>
<td>GENERAL NOTES</td>
</tr>
<tr>
<td>S2</td>
<td>LEVEL 7A – 7B SLAB PLAN</td>
</tr>
<tr>
<td>S3</td>
<td>LEVEL 7A – 7B FLOOR FRAMING PLAN</td>
</tr>
<tr>
<td>S4</td>
<td>LEVEL 6A – 6B SLAB PLAN</td>
</tr>
<tr>
<td>S5</td>
<td>ELEVATIONS</td>
</tr>
<tr>
<td>S6</td>
<td>DETAILS</td>
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<td>DETAILS</td>
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<td>S8</td>
<td>DETAILS</td>
</tr>
<tr>
<td>S9</td>
<td>DETAILS</td>
</tr>
</tbody>
</table>

STRUCTURAL DRAWINGS

WATERPROOFING AND ROOFING REPAIRS

| W100 | GENERAL NOTES |
| W101 | OVERALL PLAN |
| W102 | EXISTING NORTH AND SOUTH ELEVATIONS |
| W103 | EXISTING EAST AND WEST ELEVATIONS |
| W104 | EXISTING MISCELLANEOUS ELEVATIONS |
| W105 | NEW NORTH AND SOUTH ELEVATIONS |
| W106 | NEW EAST AND WEST ELEVATIONS |
| W107 | NEW MISCELLANEOUS ELEVATIONS |
| W201 | SEALANT JOINT DETAILS |
| W202 | SEALANT JOINT DETAILS |
| W203 | SEALANT JOINT DETAILS |
| W301 | MASONRY DETAILS |
| W302 | MASONRY DETAILS |
| W303 | MASONRY DETAILS |
| W401 | CONCRETE DETAILS |
| W402 | CONCRETE DETAILS |
| W403 | CONCRETE DETAILS |
| W404 | CONCRETE DETAILS |
| W601 | PHOTOGRAPHS 1-6 OF WORK ITEMS |
| W602 | PHOTOGRAPHS 7-12 OF WORK ITEMS |
| R101 | EXISTING ROOF PLANS |
| R102 | NEW ROOF PLANS |
| R201 | MODIFIED BITUMEN DETAILS |
| R202 | MODIFIED BITUMEN DETAILS |
OSE FORM 00501
STANDARD MODIFICATIONS TO AGREEMENT BETWEEN OWNER AND CONTRACTOR

OWNER: Medical University of South Carolina
PROJECT NUMBER: H51-N329-PG
PROJECT NAME: Parking Garage 1 Waterproofing and Masonry Repairs

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:


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:


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: Wade Gatlin
Title: University Architect
Address: 97 Jonathan Lucas Street, Charleston, SC 29425
Telephone: 843-792-2233 FAX: 843-792-1252
Email: gatlin@musc.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: (Same as listed above)
Title: _____
Address: _____
Telephone: _____ FAX: _____
Email: _____

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: Gray M. Lewis, PE
Title: Project Manager
Address: P.O. Box 30575, Charleston, SC 29417
Telephone: 843-571-2622 FAX: 843-571-6780
Email: gmlewis@forsberg-engineering.com

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

- Invitation for Construction Bids (SE-310)
- Instructions to Bidders (AIA Document A701-1997)
- Standard Supplemental Instructions to Bidders (OSE Form 00201)
- Contractor’s Bid (Completed SE-330)
- Notice of Intent to Award (Completed SE-370)
- Certificate of procurement authority issued by the SC Budget & Control Board

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

END OF DOCUMENT
AIA DOCUMENT A201 – 2007
General Conditions of the Contract for Construction

The AIA A201 is not included in this Project Manual, but is referenced as part of the Contract Conditions. The original document will be sent to the successful bidder after award for execution.
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:

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 under Section 3.8.2.1, as documented by invoices, and the allowance amounts.

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

acceptable to the Owner,

3.22 Delete Section 3.9.2 and substitute the following:

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

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

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

3.24 Delete Section 3.10.3 and substitute the following:

3.10.3 Additional requirements, if any, for the construction schedule are as follows:
(Check box if applicable to this Contract)

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

3.25 Add the following Section 3.10.4:

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

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.
If either party disputes the Architect’s 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.

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.

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.

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.

In the first sentence of Section 5.2.3, delete the words “...or Architect...” in the two places they appear.

Delete the words “…or Architect…” 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.

Add the following Section 5.2.5:

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

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;
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, as all 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 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 proceed 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 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.
OSE FORM 00811
STANDARD SUPPLEMENTARY CONDITIONS

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

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

Unless expressly provided otherwise,

3.107 Add the following Section 13.4.3:

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

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

3.108 Delete Section 13.6 and substitute the following:

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

3.109 Delete the language of Section 13.7 and substitute the word “Reserved.”

3.110 Add the following Sections 13.8 through 13.16:

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

13.9 INTERPRETATION OF BUILDING CODES
As required by Title 10, Chapter 1, Section 180 of the South Carolina Code of Laws, as amended, OSE shall determine the enforcement and interpretation of all building codes and referenced standards on state buildings. The Contractor shall refer any questions, comments, or directives from local officials to the Owner and OSE for resolution.
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)
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 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: The Owner's Engineer will provide Special Inspections.
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)
   As allowed in Section 01 21 10 Unit Prices and Allowances and on the Unit Prices Attachment to the Bid Form.

16.3. Requirements for Record Drawings, if any. (Refer to attachments as needed. If none, enter NONE)
   As required and specified in Specification Section 01 78 39 Project Record Drawings.

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)
   As required and specified in Specification Section 01 33 00 Submittal Procedures, and in each individual Technical Specification section.

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)
   As required and specified in Specification Section 01 50 00 Temporary Facilities and Controls.

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

16.7. List all attachments that modify these General Conditions. (If none, enter NONE)
   NONE
SE-355
PERFORMANCE BOND

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

Name: 
Address: 

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

Name: 
Address: 

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

Name: 
Address: 

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

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

State Project Name: Parking Garage 1 Waterproofing and Masonry Repairs
State Project Number: H51-N329-PG
Brief Description of Awarded Work, as found on the SE-330 or SE-332, Bid Form: See Bid Form and Unit Prices Attachment for all work associated with the structural and masonry repairs, and waterproofing improvements of existing Parking Garage 1 located at 97 Jonathan Lucas Street and associated work, as indicated on the project construction drawings and specifications.

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

Name: Forsberg Engineering & Surveying, Inc.
Address: P.O. Box 30575
Charleston, SC  29417-0575

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 ___________, 2015 BOND NUMBER ______________________
(shall be no earlier than Date of Contract)

CONTRACTOR
By: ____________________________ (Seal)
Print Name: ________________________
Print Title: ________________________
Witness: _________________________

SURETY
By: ____________________________ (Seal)
Print Name: ________________________
Print Title: ________________________
(Attach Power of Attorney)
Witness: _________________________

(Additional Signatures, if any, appear on attached page)
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, 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 be 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.
LABOR & MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that [Insert full name or legal title and address of Contractor]

Name:
Address:

hereinafter referred to as “Contractor”, and [Insert full name and address of principal place of business of Surety]

Name:
Address:

hereinafter called the “surety”, are jointly and severally held and firmly bound unto [Insert full name and address of Agency]

Name: The Medical University of South Carolina
Address: E&F, 97 Jonathan Lucas Street MSC 190
Charleston, SC 29425-1900

hereinafter referred to as “Agency”, or its successors or assigns, the sum of [Insert amount], 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 [Insert date] entered into a contract with Agency to construct

State Project Name: Parking Garage 1 Waterproofing and Masonry Repairs
State Project Number: H51-N329-PG

Brief Description of Awarded Work, as found on the SE-330 or SE-332, Bid Form: See Bid Form and Unit Prices
Attachment for all work associated with the structural and masonry repairs, and waterproofing improvements of existing Parking Garage 1 located at 97 Jonathan Lucas Street and associated work, as indicated on the project construction drawings and specifications.

in accordance with Drawings and Specifications prepared by [Insert full name and address of A-E]

Name: Forsberg Engineering & Surveying, Inc.
Address: P.O. Box 30575
Charleston, SC 29417-0575

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 [Insert date] day of [Insert month], 2015

BOND NUMBER

CONTRACTOR

By: ________________________________
(Seal)

Print Name: ________________________________
Print Title: ________________________________
Witness: ________________________________

SURETY

By: ________________________________
(Seal)

Print Name: ________________________________
Print Title: ________________________________
Witness: ________________________________

(Additional Signatures, if any, appear on attached page)
NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Agency to pay for all labor, materials and equipment required for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to the Agency, this obligation shall be null and void if the Contractor:
   2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants; and
   2.2 Defends, indemnifies and holds harmless the Agency from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Contract.

3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.

4. With respect to Claimants, and subject to the provisions of Title 29, Chapter 5 and the provisions of §11-35-3030(2)(c) of the SC Code of Laws, as amended, the Surety’s obligation under this Bond shall arise as follows:
   4.1 Every person who has furnished labor, material or rental equipment to the Contractor or its subcontractors for the work specified in the Contract, and who has not been paid in full therefore before the expiration of a period of ninety (90) days after the date on which the last of the labor was done or performed by him or material or rental equipment was furnished or supplied by him for which such claim is made, shall have the right to sue on the payment bond for the amount, or the balance thereof, unpaid at the time of institution of such suit and to prosecute such action for the sum or sums justly due him.
   4.2 A remote claimant shall have a right of action on the payment bond upon giving written notice by certified or registered mail to the Contractor within ninety (90) days from the date on which such person did or performed the last of the labor or furnished or supplied the last of the material or rental equipment upon which such claim is made.
   4.3 Every suit instituted upon a payment bond shall be brought in a court of competent jurisdiction for the county or circuit in which the construction contract was to be performed, but no such suit shall be commenced after the expiration of one year after the day on which the last of the labor was performed or material or rental equipment was supplied by the person bringing suit.

5. When the Claimant has satisfied the conditions of paragraph 4, the Surety shall promptly and at the Surety’s expense take the following actions:
   5.1 Send an answer to the Claimant, with a copy to the Agency, within sixty (60) days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
   5.2 Pay or arrange for payment of any undisputed amounts.
   5.3 The Surety’s failure to discharge its obligations under this paragraph 5 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a claim. However, if the Surety fails to discharge its obligations under this paragraph 5, the Surety shall indemnify the Claimant for the reasonable attorney’s fees the Claimant incurs to recover any sums found to be due and owing to the Claimant.

6. Amounts owed by the Agency to the Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any Performance Bond. By the Contractor furnishing and the Agency accepting this Bond, they agree that all funds earned by the contractor in the performance of the Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Agency’s prior right to use the funds for the completion of the Work.

7. The Surety shall not be liable to the Agency, Claimants or others for obligations of the Contractor that are unrelated to the Contract. The Agency shall not be liable for payment of any costs or expenses of any claimant under this bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

8. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.

9. Notice to the Surety, the Agency or the Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, the Agency or the contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

10. By the Contractor furnishing and the Agency accepting this Bond, they agree that this Bond has been furnished to comply with the statutory requirements of the South Carolina Code of Laws, as amended, and further, that any provision in this Bond conflicting with said statutory requirements shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

11. Upon request of any person or entity appearing to be a potential beneficiary of this bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

12. Any dispute, suit, action or proceeding arising out of or relating to this Bond shall be governed by the laws of the State of South Carolina.

13. DEFINITIONS

13.1 Claimant: An individual or entity having a direct contract with the Contractor or with a Subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms “labor, materials or equipment” that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of the Contractor and the Contractor’s Subcontractors, and all other items for which a mechanic’s lien might otherwise be asserted.

13.2 Remote Claimant: A person having a direct contractual relationship with a subcontractor of the Contractor or subcontractor, but no contractual relationship expressed or implied with the Contractor.

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

FOR

PARKING GARAGE 1
WATERPROOFING AND MASONRY REPAIRS
MEDICAL UNIVERSITY OF SOUTH CAROLINA
97 JONATHAN LUCAS STREET
CHARLESTON, SC

STATE PROJECT NO. H51-N329-PG

MARCH 23, 2015

Prepared by

FORSBERG ENGINEERING
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**Division 08 – Openings**
(Not Used)

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09 96 00 High Performance Coatings

**Division 10 – Division 31**
(Not Used)

**Division 32 – Exterior Improvements**
32 17 23 Pavement Markings
SECTION 01 11 00 - SUMMARY OF WORK

PART ONE - GENERAL

The following General Requirements, are included to cover the special requirements of this Project and will note the special requirements that are in addition to the General Conditions and Supplementary Conditions.

1.1 WORK INCLUDED:

A. The scope of work of this project is the waterproofing, masonry and structural repairs to the top two floors (Levels 6 and 7) of the MUSC Parking Garage No. 1 located at 97 Jonathan Lucas Street in Charleston, SC. The scope of work shall include, but not necessarily be limited to, the demolition and replacement of existing building elements as pertaining to building exterior masonry, structural steel repairs and painting, concrete deck repairs and rehabilitation, seal coating of concrete decks and pavements, roof repairs, pavement markings and traffic control devices, traffic control and parking signage; and other associated work to provide usable, functioning facilities to the Owner.

B. The Contractor shall be responsible for all demolition work, the construction of all concrete pavements, masonry repairs, structural steel repairs, new structural improvements, new exterior façade panel system, roof repairs, painting, and other work items indicated. Contractor shall coordinate all work with Owner to facilitate timely schedules and minimize disruption to Facility operations. All work will be performed on the Owner’s private property and no work shall be performed outside this property nor encroach in any way into the adjacent properties, or into public streets or rights-of-way.

1.2 CONTRACT DOCUMENTS

A. DRAWINGS:

T101 TITLE SHEET

STRUCTURAL DRAWINGS
S1 GENERAL NOTES
S2 LEVEL 7A – 7B SLAB PLAN
S3 LEVEL 7A – 7B FLOOR FRAMING PLAN
S4 LEVEL 6A – 6B SLAB PLAN
S5 ELEVATIONS
S6 DETAILS
S7 DETAILS
S8 DETAILS
S9 DETAILS

WATERPROOFING AND ROOFING REPAIRS
W100 GENERAL NOTES
W101 OVERALL PLAN
W102 EXISTING NORTH AND SOUTH ELEVATIONS
W103 EXISTING EAST AND WEST ELEVATIONS
W104 EXISTING MISCELLANEOUS ELEVATIONS
W105 NEW NORTH AND SOUTH ELEVATIONS
W106 NEW EAST AND WEST ELEVATIONS
W107 NEW MISCELLANEOUS ELEVATIONS
W201 SEALANT JOINT DETAILS
W202 SEALANT JOINT DETAILS
W203 SEALANT JOINT DETAILS
W301 MASONRY DETAILS
1.3 TIME OF COMPLETION AND LIQUIDATED DAMAGES

A. Time of Completion: Unless an extension of time is granted, as provided for in Paragraph 14.3 of General Conditions of this contract, work under this contract shall be substantially complete as specified in the SE-330, “Bid Form”, Page BF-3, Paragraph entitled “Time of Contract Performance.”

B. Liquidated Damages: As specified in Document 00501-OSE, Paragraph 3.4.1 and 3.4.2 and also in SE-330, “Bid Form”, Page BF-3, Paragraph entitled “Liquidated Damages and Early Completion Award.”

C. Bid Alternate #1: Provide phasing of the 6th floor level repair work to permit simultaneous parking and vehicle access as depicted in the attached sketch. The sketch depicts areas of work to be phased not the order of phasing which is at the Contractor’s discretion. The selective phasing does not affect the 7th floor level. The contractor may submit an alternate phasing plan provided it does not diminish the amount of parking provided by the attached plan and meets with the Owner’s approval. Contract duration remains the same as noted above.

1.4 MANNER OF CONDUCT OF THE WORK

A. Responsibility for enforcing coordination requirements, compliance with all local laws and ordinances and close adherence to time schedule rests solely with the general contractor.

1.5 SPECIAL SITE CONDITIONS

A. Since the work area is an operating parking garage supporting patients and visitors to the MUSC Hospital and Children’s Hospital, and other facilities, close attention shall be paid to proper management of the work to keep as much of the garage operating, on a floor-by-floor basis as possible, and in close coordination with the MUSC Department of Parking Management and the Department of Engineering & Facilities. Encroachment beyond the work site limits by the Contractor shall be strictly avoided. Material must be kept in neat and orderly fashion and the work site area must be kept clean and free of debris accumulation. Trash and debris shall be removed by Contractor daily.

B. The Medical University of South Carolina (MUSC) is has established its campus properties as a Tobacco-Free Campus, as outlined in the attached document entitled: “Human Resources Management Policy - Tobacco-Free Campus - Policy 49”
This policy document will be attached to end of this specification section and made part of the Contract requirements for the project. The Contractor will be required to comply with the published policy.

1.6 MATERIAL STORAGE

A. The project site is very limited for construction material storage. The Contractor shall have all construction materials delivered to and stored at the construction site on an as-needed basis. Scheduling of deliveries and an off-site storage of bulk items may be required. The Contractor will be responsible for security of all tools, equipment, and stored materials.

1.8 WORK SCHEDULE

A. The Contractor will be permitted to carry out all phases of his work during normal daily working hours.

B. The Contractor shall submit, in writing, a proposed work schedule. The work schedule shall identify the different system or discipline milestone dates

C. Nothing in the above-mentioned work schedule shall void the Contractor's option to perform overtime work if he so desires and if so approved by the University authorities however, Contractor shall receive no additional compensation for overtime work performed.

1.9 SAFETY COMPLIANCE

A. Contractors must demonstrate a commitment to safety through an excellent work-safety record and a comprehensive written Safety-and-Health Program to be considered for work at MUSC.

B. Contractor's must provide a copy of their written Safety-and Health Program including provision for hazard communication, respiratory protection, hearing conservation, confined space entry and fire safety. MUSC requires a written statement that attests that the contractor will comply with applicable Federal, State, and MUSC safety policies.

C. The Contractor must provide MUSC with verification that all contract employees have been trained in OSHA required safety training.

D. Contractor's must provide MUSC with copies of Material Safety Data Sheets for all substances or commodities the contractor might bring to our use on MUSC property.

1.10 SEQUENCING OF CONSTRUCTION

A. Time is of the essence. It is the intent of the Owner that the work shall commence immediately upon issuance of the "Notice to Proceed", as outlined in the SE-330 “Bid Form”, and that all work shall be completed within the number of days specified.

B. The Contractor shall schedule the work in such a matter that will allow the Owner to fully occupy all spaces within the time frame specified. No time extension shall be granted for equipment delivery.

PART TWO – PRODUCTS
(Not Used.)

PART THREE – EXECUTION
(Not used.)

END OF SECTION
NOTE: THE LANGUAGE USED IN THIS DOCUMENT DOES NOT CREATE AN EMPLOYMENT CONTRACT BETWEEN THE EMPLOYEE AND THE MEDICAL UNIVERSITY OF SOUTH CAROLINA (MUSC). MUSC RESERVES THE RIGHT TO REVISE THE CONTENT OF THIS DOCUMENT, IN WHOLE OR IN PART. NO PROMISES OR ASSURANCES, WHETHER WRITTEN OR ORAL, WHICH ARE CONTRARY TO OR INCONSISTENT WITH THE TERMS OF THIS PARAGRAPH CREATE ANY CONTRACT OF EMPLOYMENT.

I. PURPOSE

MUSC is committed to promoting a healthy, tobacco-free environment for its employees, faculty, students, visitors and patients. The purpose of this policy is to provide a healthy environment, minimize the negative effects of passive smoke and tobacco use, maximize fire safety and promote wellness and good health habits within all MUSC facilities, including MUSC affiliates, and the surrounding campus.

II. POLICY

A. Covered Individuals

The provisions of this policy shall apply to all employees (including faculty and staff), patients, visitors, students, volunteers, contractors and vendors unless otherwise noted.
B. **Use of Tobacco Products**

The use of any tobacco product is prohibited in all buildings, grounds and spaces either leased or owned by the Medical University. The Human Resources Management [Policy No. 49, Tobacco-Free Campus](#), includes, but is not limited to, offices, classrooms, laboratories, elevators, stairwells, restrooms, shuttle buses, shuttle bus stops, sidewalks, parking areas, meeting rooms, hallways, lobbies, and other common areas. The use of tobacco products in University owned, operated or leased vehicles is prohibited. Use of tobacco products is also prohibited in personal vehicles parked on MUSC property. MUSC also discourages the use of tobacco products by staff or visitors on properties adjacent to the campus.

C. **List of Tobacco Products**

Tobacco products include, but are not limited to, cigarettes, cigars, pipes, chewing tobacco, e-cigarettes and other smokeless tobacco products.

D. **Related Issues**

Employees, students, volunteers, contractors and vendors are expected to adhere to professional standards of appearance and not have an odor of tobacco products on their clothing or person.

### III. INFORMATION AND PROCEDURE

A. **Faculty/Staff/Volunteers**

1. Faculty, staff and volunteers are expected to comply with the Tobacco-Free Campus Policy and assist with sharing information about the policy.

2. New employees and volunteers will be informed of the Tobacco-Free Campus Policy during orientation.

3. Enforcement of the policy rests with the appropriate supervisory staff, deans, department heads and administrative officials.

4. When employees or volunteers observe violations of the policy, they should politely remind the offender of the policy and request that they dispose of tobacco materials.
5. If the employee or volunteer continues to violate the policy, the location and time of the violation should be reported to the appropriate supervisory staff, dean, department head or administrative official. Human Resources Employee Relations may also be contacted to report violations.

6. Violation patterns will be assessed and appropriate action initiated. Employees who are found to be in violation will be disciplined in accordance with the Human Resources Policy No. 45, Disciplinary Action. Action may range from written reprimand to termination. Refer to specific guidelines as outlined by MUSC, MUHA and UMA.

B. Patients

1. Faculty, staff and clinical staff with patient care responsibilities are responsible for communicating and ensuring compliance with the Tobacco-Free Campus Policy.

2. Upon admission/check-in, patients will be verbally informed of the policy and a copy will be provided upon request.

3. Patients violating MUSC’s policy will be asked to dispose of tobacco materials.

4. Tobacco replacement therapies, i.e. nicotine patch, nicotine gum, etc., may be prescribed by the patient’s physician.

C. Visitors

1. Visitors will be informed of the policy and asked to comply while they are on campus.

2. Signage will be posted throughout MUSC’s buildings and grounds; stating this facility is a tobacco-free campus.

3. All employees and volunteers are encouraged to assist with the education of visitors regarding the policy, using policy information cards, which will be made available.

4. Employees are expected to help enforce the policy with visitors by requesting that they dispose of tobacco materials and respect MUSC’s healthcare mission and tobacco-free campus.
5. If a visitor is observed repeatedly violating the policy after being advised of the policy, staff should note the location and time of the violation and contact their respective manager, Department of Public Safety or Medical Center Safety and Security, or Human Resources.

D. Students

1. New students will be informed of the Tobacco-Free Campus Policy during orientation.

2. Enforcement of the policy rests with the respective Dean’s office.

3. When students observe violations of the policy, they should remind their fellow students of the policy and ask them to dispose of the tobacco materials.

4. If the student continues to violate the policy, the location and time of the violation should be reported to the appropriate Dean’s office.

5. Violation patterns will be assessed and appropriate action initiated.

6. Affiliation agreements will include the Tobacco-Free Campus Policy so that students from other schools will be advised of the policy.

E. Contractors/Vendors

1. A provision will be inserted in all contracts, e.g. construction and/or maintenance, to prohibit the employees of contractors/vendors from using tobacco materials on property owned or leased by MUSC.

2. Failure by the contractor/vendor or their employees to comply with the provisions of this policy could result in the termination of the contract.

IV. ENFORCEMENT

A. The monitoring and enforcement of this policy is the responsibility of ALL MUSC/MUHA/UMA employees, students and volunteers. Each individual should consistently and politely bring any infraction of this policy to the attention of the person or persons observed violating the policy.
B. The MUSC Department of Public Safety and Medical Center Safety and Security will assist in the enforcement of this policy by reporting violations to the appropriate manager or supervisor. Employees are also expected to assume leadership roles by adhering to the policy provisions and by reminding others who aren’t in compliance of the policy provisions.

C. MUSC will provide Tobacco-Free Campus Policy information cards to facilitate the education and enforcement of the policy.

V. RESOURCES

MUSC will offer resources and support to tobacco users in abstaining from tobacco use on campus and in supporting users who desire to quit using tobacco. Smoking cessation classes and other tobacco education related resources or programs will be offered periodically for MUSC employees. Many of these programs are offered at little to no cost. Additional resources are outlined on the Tobacco-Free Campus website.

VI. EXCEPTIONS

Individuals enrolled in smoking research and/or treatment programs are permitted to smoke in designated smoking areas that are physically separated from care, treatment and service areas upon approval. If the Medical Center decides that patients may smoke in specific circumstances, it will designate smoking areas that are physically separated from care, treatment and service areas.

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<th>Approved by:</th>
<th>Information Contact</th>
<th>Approved</th>
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<tr>
<td>Lisa P. Montgomery</td>
<td>Director of Human Resources Management</td>
<td>November, 2011</td>
</tr>
<tr>
<td>Vice President for Finance &amp; Administration</td>
<td></td>
<td>Effective March 1, 2012</td>
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SECTION 01 21 10 - UNIT PRICES AND ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Unit Prices

1. Provide unit prices for the specific quantities as listed on the Unit Prices Attachment. A lump sum cost for the quantity amount is to be included in the Base Bid unless otherwise noted.

   a. A single unit price will be provided for each item, to be used as an “add” or “deduct,” based on actual field conditions.

2. The exact locations of these repairs are not defined in the Construction Documents. These areas will be identified during the demolition/construction process.

3. Maintain a daily log of all unit price quantities used based on contract requirements.

4. Notify Owner in writing when 80% of contract quantity is used for each unit price item.

5. Owner is not responsible for quantities which exceed 80% unless Owner is notified in writing, prior to exceeding these quantities, and contractor receives written approval to proceed.

6. Provide photographs or videotape documentation of actual quantities used.

7. Locate quantities, and show their locations on elevations or plan view drawings. Provide corresponding photographic or videotape documentation. This is required with each Application for Payment requesting payment for quantities unused.

8. Provide actual used quantities on each Application for Payment request.

9. Provide summary of unit prices “required” vs. “used” and above documentation when requested, and as part of Project Close-Out Requirements of Section 01 77 00, Contract Close-Out.

B. Allowances

1. In addition to the unit prices, an allowance of $2,500 is included for undetermined or unforeseen items which may be discovered that are not currently included in the Contract Requirements.

2. Allowance shall cover the cost of prescribed items not specified in detail with the provision that variations between such amount and the finally determined cost of the prescribed items will be reflected in change orders appropriately adjusting the contract sum.

C. The cost for a Unit Price or Allowance item shall include all equipment, material and labor, manufacturing, transportation, deliver, handling and installation including fees, taxes, insurance, bonding, overhead and profit.

D. Base change order for unit prices and allowances solely on difference between actual quantity of work required and quantity of documented and approved work.
1.2 RELATED REQUIREMENTS

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

B. The attention of the Contractor and the Subcontractor of this Section is directed to the Instructions to Bidders concerning substitution of materials and equipment.

C. Section 01 33 00: Submittals: Submission of Manufacturers' Instructions, Shop Drawings, Product Data, and Certificates.

D. Section 01 77 00: Contract Close-Out.

E. All technical specification sections.

1.3 COORDINATION

A. Provide line item for each of these items on the Schedule of Values in accordance with Section 01 33 00, Submittals.

B. Provide documentation of these items in accordance with Section 01 77 00, Contract Close-Out.

C. Provide actual quantities used on each Application for Payment Request.

PART 2 - PRODUCTS

2.1 General Contract Unit Price Quantities

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

2.2 General Contract Allowances

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

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 21 10
SECTION 01 25 00 – SUBSTITUTION PROCEDURES

PART ONE - GENERAL

1.1 WORK INCLUDED

A. To establish a mandatory method or system of submitting and approval or disapproval of various items, materials, equipment, products, etc., in lieu of those specified or indicated.

1.2 RELATED WORK

A. Documents affecting work of this Section, include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division One of these Specifications.

1.3 QUALITY ASSURANCE

A. The contract is based on the standards of quality established in the Contract Documents but specific reference in the specifications to any article, device, product, materials, fixture, form or type of construction, etc., by name, make, or catalog number, with or without the words "or equal", shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition and the Contractor in such cases may, at his option, use any article, device, product, material, fixture, form or type of construction which, in the judgment of the Owner expressed in writing, is equal to that named.

B. Where quality and other characteristics are very nearly the same, the question of determining equal materials and readily available services sometime resolves itself to a matter of personal opinion and judgment and in these and all other cases involving the approval of materials, the opinion, judgment and decision of the Owner shall be final and bind all parties concerned.

C. The following products do not require further approval except for interface within the work:
   1. Products specified by reference to standard specifications such as ASTM and similar standards.
   2. Products specified by the manufacturer's name and catalog model number.

1.4 REQUEST FOR SUBSTITUTION

A. Requests for written approval to substitute materials or equipment considered by the Contractor as equal to those specified must have been submitted for approval ten (10) calendar days prior to bid opening date to the Owner. Requests must have been accompanied by samples, descriptive literature, and engineering information as necessary to fully identify and allow appraisal of the product. Requests must have been made in writing.

1.5 APPROVED SUBSTITUTIONS

A. Approval of the Owner to use materials and/or equipment, if granted, will have been in the form of a written addendum and will have been issued to all bidders of record. Approved substitutions may be used at Contractor's option.

B. No substitutions will be allowed, nor will an increase in Contract be allowed (for using materials specified) if substitutions have been requested later than ten (10) days prior to bid opening date.

END OF SECTION
SECTION 01 26 33 – CHANGES IN THE WORK

PART ONE - GENERAL

1.1 WORK INCLUDED

A. This Section established additional requirements pertaining to Changes in the Work initiated by the Owner or Contractor.

1.2 RELATED WORK DESCRIBED ELSEWHERE


B. 00811 Standard Supplementary Conditions

1.3 QUALITY ASSURANCE

A. The Owner shall submit request for Changes in the Work, in writing to the Contractor, stating the specific scope of the change.

B. The Contractor shall review the Owner's request and provide a price and time requirement (if any) in a timely manner.

PART TWO - PRODUCTS

2.1 QUOTATIONS:

A. All quotes shall be itemized utilizing the State Form SE 480.

PART THREE - EXECUTION

3.1 PREPARATION

A. Immediately after receipt of written approval from the Owner notify all subcontractors and suppliers affected by the change and proceed with work promptly.

END OF SECTION
SECTION 01 29 73 – SCHEDULE OF VALUES

PART ONE - GENERAL

1.1 WORK INCLUDED

A. Provide a detailed breakdown of the agreed Contract Sum showing values allocated to each of the various parts of the Work, as specified herein and in other provisions of the Contract documents.

1.2 RELATED WORK:

A. Documents affecting work of this Section, include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division One of these specifications.

B. Schedule of values is required to be compatible with the "continuation sheet" accompanying application for payment.

1.3 QUALITY ASSURANCE:

A. Use required means to assure arithmetical accuracy of the sums described.

B. When so required by the Owner, provide copies of the subcontracts or other data acceptable to the Owner, substantiating the sums described.

1.4 SUBMITTALS

A. Prior to first application for payment, submit proposed schedule of values to the Owner.

1. Meet with the Owner's representative and determine additional data, if any, required to be submitted.

2. Secure the Owner's approval of the schedule of values prior to submitting first application for payment.

END OF SECTION
SECTION 01 31 19 – PROJECT MEETINGS

PART ONE - GENERAL

1.1 DESCRIPTION

A. Work included: To enable orderly review during progress of the work, and to provide for systematic discussion of problems, the Owner's representative will conduct project meetings throughout the construction period.

B. Related Work: (1) Documents affecting the work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division One of these specifications. (2) The Contractor's relations with his subcontractors and material suppliers, and discussions relative thereto, are the Contractor's responsibility and normally are not part of the project meetings content.

1.2 QUALITY ASSURANCE

A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.3 SUBMITTALS

A. Agenda items: To the maximum extent practicable, advise the Owner's representative at least 24 hours in advance of project meetings regarding items to be added to the agenda.

B. Minutes: (1) The Contractor will compile minutes of each project meeting, and will furnish three copies to the Owner. (2) Recipients of copies may make and distribute such other copies as they wish.

PART TWO - PRODUCTS

Not Used.

PART THREE - EXECUTION

3.1 MEETING SCHEDULE

A. Except as noted below for Preconstruction Meeting, project meetings will be held bi-weekly.

B. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 MEETING LOCATION

A. The Contractor will establish meeting location. To the maximum extent practicable, meetings will be held at the job site.

3.3 PRECONSTRUCTION MEETING

A. Preconstruction meeting will be schedule to be held within 10 working days after the Owner has issued the Notice to Proceed.

1. Provide attendance by authorized representatives of the Contractor and major Subcontractors.

2. The Owner will advise other interested parties, and request their attendance.
B. Minimum agenda: Data will be distributed and discussed on at least the following items:

1. Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers and Owner.
2. Channels and procedures for communication.
3. Construction schedule, including sequence of critical work.
4. Contract Documents, including distribution of required copies of original documents and revisions.
5. Processing of shop drawings and other data submitted to the Owner for review.
6. Processing of bulletins, field decisions, and change orders.
7. Rules and regulations governing performance of the work.

3.4 PROJECT MEETINGS

A. Attendance

1. To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of work.
2. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the work is involved.

B. Minimum Agenda

1. Review, revise as necessary, and approve discussions, agreements and understanding of the previous meeting.
2. Review progress of the work since last meeting, including status of submittals for approval.
3. Identify problems that impede planned progress.
4. Develop corrective measures and procedures to regain planned schedule.
5. Complete other current business.

END OF SECTION
SECTION 01 32 16 – CONSTRUCTION PROGRESS SCHEDULE

PART ONE - GENERAL

1.1 WORK INCLUDED

A. To assure adequate planning and execution of the Work so that the Work is completed within the number of calendar days allowed in the Contract, and to assist the Owner in evaluating progress of the Work, prepare and maintain the schedules and reports described in this Section.

1.2 RELATED WORK:

A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division One of these specifications.

B. Requirements for progress schedule: General Conditions.

C. Construction period: Form of Agreement.

1.3 DEFINITIONS

"Day" as used throughout the Contract unless otherwise stated, means "calendar day."

1.4 QUALITY ASSURANCE:

A. Employ a scheduler who is thoroughly trained and experienced in compiling construction schedule, and in preparing and issuing periodic updates and reports as required.

B. Construction schedule: Within 10 calendar days after the Contractor has received the Owner's Notice to Proceed, submit on reproducible copy and four prints of a construction schedule.

C. Periodic revisions and reports: Submit four prints of the construction schedule updated along with the monthly payment request.

PART TWO - PRODUCTS

2.1 CONSTRUCTION ANALYSIS

A. Graphically show by bar-chart the order and interdependence of all activities necessary to complete the work, and the sequence in which each activity is to be accomplished, as planned by the Contractor and his project field superintendent in coordination with all subcontractors whose work is shown on the diagram.

PART THREE - EXECUTION

3.1 CONSTRUCTION SCHEDULE

A. As soon as practicable after receipt of Notice-to-Proceed, complete the construction analysis in preliminary form, meet with the Owner, revisions agreed upon.

3.2 PERIODIC REVISIONS AND REPORTS
A. As required under Paragraph 1.05-D above, update the approved construction schedule along with each payment certificate. Make only those revisions to approved construction schedule as are approved in advance by the Owner.

1. Indicate "actual" progress in percent completion for each activity in blank space provided below listed activity.

2. Provide written narrative summary of revisions causing delay in the program, and an explanation of corrective actions taken or proposed.

END OF SECTION
PART ONE - GENERAL

1.1 SUBMITTAL REQUIREMENTS

Submit preconstruction submittals, schedules, and other administrative submittals directly to the Owner, as specified for each item. Submit shop drawings, products data as required to the Owner in sufficient number to allow the Owner to retain two copies. Make all preconstruction submittals at one time, no later than three weeks after receipt of the "Notice to Proceed." Make all material and shop drawing submittals no less than 3 weeks prior to performing work.

A. Shop drawings shall be submitted in a clear and thorough manner. Details shall be identified by reference to sheets and details, schedules and room numbers shown on the Contract Drawings and Division of the specification and indexed accordingly.

B. Product Data, shall clearly identify pertinent products and models on each copy. Show performance characteristics, capacities, dimensions, clearances wiring piping diagrams and controls as required. Modify manufacturer's standard schematic drawings and diagrams to delete information to provide information specifically applicable to the work.

C. Sample, shall be of sufficient size and quantity to clearly illustrate, functional characteristics of the product, with integrally related parts and attachment devices present a full range of color, texture and pattern.

1.2 CONTRACTOR RESPONSIBILITIES:

A. Review Shop Drawings, Product Data and Samples prior to submission.

B. Determine and verify:
   1. Field measurements.
   2. Field construction criteria.
   3. Catalog numbers and similar data.

C. Coordinate each submitted with requirements of the work and of the Contract Documents.

D. Notify the Owner in writing, at time of submission, of any deviations in the submittals from requirements of the Contract Documents.

E. Begin no fabrication or work which requires submittals until return of submittals with the Owner's approval. Purchase no materials requiring submittal approval until return of submittal with Owner’s approval. Any work started or materials purchased prior to approval and the respective submittal is rejected shall be removed or replaced at the Contractor’s expense.

1.3 SUBMISSION REQUIREMENTS:

A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the Work or in the work of any other Contractor.

B. Number of submittals required:
1. Shop Drawings: Submit five (5) copies: one for the Project Architect/Engineer to retain, two for the Owner to retain, and two to return to the Contractor.

2. Product Data: Submit the number of copies which the Contractor requires, plus two which will be retained by the Owner, and one will be retained by the Project Architect/Engineer.

3. Samples: Submit the number stated in each specification Division.

C. Submittal shall contain:

1. The date of submission and the dates of any previous submissions.
2. The project title and number.
4. The names of:
   a. Contractor
   b. Supplier
   c. Manufacturer
5. Identification of the product, with the specification Division number.
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of the Work or materials.
8. Applicable standards, such as ASTM or Federal Specification numbers.
10. Identification of revisions on resubmittals.
11. An 8 in. x 3 in. blank space for Contractor and Owner stamps.
12. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the Work and of Contract Documents.

1.4 RESUBMISSION REQUIREMENTS:

A. Make any corrections or changes in the submittals required by the Owner and resubmit until approved.

B. Shop Drawings and Product Data:

   1. Revise initial drawings or data, and resubmit as specified for the initial submittal.

1.5 DISTRIBUTION

A. Distribute reproduction of Shop Drawings and copies of Product Data which carry the Owner stamp of approval to:
   2. Record Documents file.
   3. Other affected contractors.
   4. Subcontractors.
   5. Supplier or Fabricator.

1.6 OWNER DUTIES:

A. Review submittals with reasonable promptness and in accordance with approved schedule.
B. Affix stamp and initials or signature, and indicate requirements for resubmittal, or approval of submittals.

C. Return submittals to Contractor for distribution, or for resubmission.

END OF SECTION
SECTION 01 50 00 – TEMPORARY FACILITIES AND CONTROLS

PART ONE - GENERAL

1.1 CONTRACTOR'S TEMPORARY EQUIPMENT

   A. Contractor shall furnish, maintain and remove at completion, all temporary equipment that is required for proper execution of work of all trades.

1.2 LIFTING DEVICES AND HOISTING FACILITIES

   A. Contractor shall provide all necessary lifting and hoisting equipment to accomplish the work.

1.3 TEMPORARY WATER DURING CONSTRUCTION

   A. The Contractor shall make arrangements to provide all water required during construction. All necessary piping, valves, cut-offs, etc., required to keep Owner's system in continuous operation shall be furnished and installed by Contractor. All surplus materials and equipment shall be removed at completion of project.

1.4 TEMPORARY ELECTRICITY DURING CONSTRUCTION

   A. The Contractor shall make the necessary arrangements and provide all temporary electrical services and lighting required during construction.

1.5 TEMPORARY TOILET FACILITIES

   A. Contractor shall provide, maintain, and remove upon completion of the work, temporary toilet facilities for his employees and subcontractors.

1.6 WEATHER PROTECTION, TEMPORARY HEAT AND VENTILATION:

   A. The Contractor shall provide all weather protection and temporary heat as necessary to carry on the work and materials against injury from dampness and cold, to dry out the building and to provide suitable working conditions for the installation and curing of materials until final acceptance by the Owner.

PART TWO - MATERIALS

Not used.

PART THREE - EXECUTION

Not used.

END OF SECTION
SECTION 01 71 23 - CONSTRUCTION STAKEOUT AND FIELD ENGINEERING

PART ONE - GENERAL

1.1 DESCRIPTION

A. This item shall consist of furnishing, placing, replacing when required, marking and maintaining all Construction Layout stakes necessary for proper guidance and control of construction operations. It shall also include the preparation of all construction staking, field books, such as alignment books, slope and grade books, blue-top books etc. It shall also include any additional Surveyor's, Civil, Structural or other professional engineering services specified or required to execute Contractor's construction methods.

1.2 QUALIFICATIONS OF SURVEYOR OR ENGINEER

A. When it is specified or required for the Contractor to retain the services of an engineer or surveyor, then each shall meet the following requirements:

1. Surveyor shall be a Registered Land Surveyor in the State the project site is located.
2. Engineer shall be a Registered Professional Engineer in the State the project site is located.

PART TWO - PRODUCTS

2.1 EQUIPMENT AND MATERIALS

A. All surveying equipment, stakes and any other material necessary to perform the work shall be furnished by the Contractor, either directly or by a sub-contracted Registered Land Surveyor.

PART THREE - EXECUTION

3.1 SURVEY REFERENCE POINTS

A. Existing basic horizontal and vertical control points for the Project are those designated on drawing.
B. Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction.
C. The Contractor shall provide a Registered Land Surveyor, subject to the Owner's approval, to establish and/or re-establish all benchmarks, reference points, line and grade points necessary to complete the work at no additional expense to the Owner.
D. The Contractor shall notify the Project Engineer in the event any original reference point or benchmark as defined in subparagraph A and B, is destroyed or lost, and if required by the Project Engineer, shall replace said reference point or benchmark as per the requirements of subparagraph C.

3.2 CONSTRUCTION STAKEOUT

A. Establish lines and levels, locate and layout by instrumentation and similar appropriate means all site improvements:

1. Stakes for grading, fill and topsoil placement
2. Stakes for alignment and grades for pavements or structures.

B. A complete and accurate log of all control and survey work, as it progresses, shall be maintained.

C. Contractor shall verify layouts, and line and grade of work, as work progresses, at random times to verify proper installation and shall notify Project Engineer of status.

D. At the Project Engineer's request, surveying stakeout data shall be submitted for review to verify accuracy of field engineering work.

3.3 RECORD DRAWINGS AND CERTIFICATION

A. Comply with requirements of Section 01 78 39 PROJECT RECORD DOCUMENTS. Also provide copies of field notes and data files used to verify the locations and elevations of installed work that varied from the construction documents due to change orders or other approved field adjustments.
SECTION 01 73 29 – MISCELLANEOUS CUTTING

PART ONE - GENERAL

1.1 WORK INCLUDED
A. This Section establishes general requirements pertaining to cutting (including excavating), fitting, and patching of the Work required to:
   1. Make the several parts fit properly.
   2. Uncover Work to provide for installation, inspection, or both, of ill-timed Work.
   3. Remove and replace Work not conforming to requirements of the Contract Documents.
   4. Remove and replace defective Work.

1.2 RELATED WORK DESCRIBED ELSEWHERE:
A. In addition to other requirements specified, upon the Owner's request, uncover Work to provide for inspection by the Owner of covered Work; and remove samples of installed materials for testing.
B. Coordinate all work with the requirements of Section 02 04 03, Cutting and Patching for Building Envelopes.

1.3 QUALITY ASSURANCE
A. Perform all cutting and patching in strict accordance with pertinent requirements of these Specifications and, in the event no such requirements are determined, in conformance with the Owner's written direction:

1.4 SUBMITTALS:
A. Request for the Owner's consent:
   1. Prior to cutting which affects structural safety, submit written request to the Owner for permission to proceed with cutting.
   2. Should conditions of the Work, or schedule, indicate a required change of materials or methods for cutting and patching, so notify the Owner and secure his written permission prior to proceeding.
B. Notices to the Owner
   1. Prior to cutting and patching pursuant to the Owner's instructions, submit cost estimate to the Owner. Secure the Owner's approval of cost estimate and type of cost reimbursement before proceeding with cutting and patching.
   2. Submit written notice to the Owner designating time the Work will be uncovered, to provide for the Owner's observation.

PART TWO - PRODUCTS

2.1 MATERIALS
A. For replacement of Work removed, use materials which comply with the pertinent Sections of these Specifications.

2.2 PAYMENT FOR COSTS
A. The Owner will reimburse the Contractor for cutting and patching performed pursuant the Owner's written request after claim for such reimbursement is submitted by the Contractor. Perform all other cutting and patching needed to comply with the Contract Documents at no additional cost to the Owner.

PART THREE - EXECUTION

3.1 CONDITIONS

A. Inspection: Inspect existing conditions, including elements subject to movement or damage during cutting and patching. After uncovering the Work, inspect conditions affecting installation of new Work.

B. Discrepancies: If uncovered conditions are not as anticipated, immediately notify the Owner and secure needed directions.

3.2 PREPARATION PRIOR TO CUTTING

A. Provide all required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the Work.

3.3 PERFORMANCE

A. Perform cutting and demolition by methods which will prevent damage to other portions of the Work and will provide proper surfaces to receive installation of repair and new work. Perform fitting and adjustment of products to provide finished installation complying with the specified tolerances and finishes.

END OF SECTION
SECTION 01 73 32 – MISCELLANEOUS PATCHING

PART ONE - GENERAL

1.1 SCOPE OF THE WORK

A. The work of this section shall include all patching of any existing substrate or finish material which is displaced, disturbed, marred or otherwise damaged by the operations of the work of this contract. Coordinate all work with Section 02 04 03 Cutting and Patching for Building Envelopes, and other specification sections, as they reply to their respective area of work.

B. Patching is herein further understood to include replacement of certain materials which, by their nature, cannot be patched such as resilient base, resilient flooring, etc. This statement primarily concerns itself with finishes in existing areas indicated to remain as part of the finished project.

C. For alterations and additions the repair of all damages made by cutting shall include restoring those surfaces to their original state of finish, including surface texture, design, color, etc., unless new finishes are called for. All such repairs shall be performed by personnel trained and proficient in the particular trades involved; i.e., plaster repairs by plasterers, masonry repairs by masons, tile repairs by tile setters, etc. Masonry and tile repairs shall be toothed to maintain bond or pattern. It is the intent of these specifications that all areas requiring repairs shall be restored to a completing finished condition, acceptable to the Owner.

1.2 INSPECTION

A. The contractor shall visit the building, inspect the areas in which work is to be performed and determine for himself the types and extent of finishing materials existing.

B. He shall determine which materials will probably require patching and which will probably require replacement and to what extent.

C. Failure to do so will not relieve him from this responsibility to conform to the requirements of this section.

PART TWO - PRODUCTS

2.1 EXISTING ADJACENT FINISHES

A. The intent of this specification is that all finished surfaces shall present an unblemished finished appearance conforming to existing adjoining materials and colors.

PART THREE - EXECUTION

3.1 CONCRETE

A. Concrete shall be patched by cutting out old concrete to remove loose aggregate or inform cement. Apply approved bonding agent to old concrete to insure firm juncture of new and old.

3.2 CLEAN UP

A. Remove all debris and excess material from the site and legally dispose of same.

END OF SECTION
SECTION 01 77 00 – CLOSEOUT PROCEDURES

PART ONE – GENERAL

1.1 SUBMITTAL REQUIREMENTS

A. All of the following items shall be submitted prior to Final Application for Payment:

1. **Materials List**: Furnish the Owner, a typewritten list in triplicate showing every manufactured item/material used in job. Include catalog number, manufacturer's name and address, distributor's name and address. Type lists neatly and index according to respective specification sections of work.

2. **Maintenance Instructions**: Arrange to instruct operating and maintenance personnel of Owner in use and maintenance of floor covering, specialty equipments, provided under this contract. Submit letter showing when training was held and who attended.


4. **Contractor's Affidavit of Payment of Debts and Claims** on AIA Document G706.

5. **Consent of Surety to Final Payment** on AIA Document G707.

6. **Contractor's Release or Waiver of Liens**, conditional upon receipt of final payment. Submit in letter-form on Contractor's letterhead.

7. **Contractor's Identification Badges** shall be returned prior to receipt of final payment.

8. **Certificate of Final Completion**: Submit in letter-form on Contractor's letterhead that all items of work on the Substantial Completion punch list are complete.

PART TWO – PRODUCTS

Not used

PART THREE – EXECUTION

Not used.

END OF SECTION
SECTION 01 78 39 – PROJECT RECORD DOCUMENTS

PART ONE - GENERAL

1.1 WORK INCLUDED:

A. Throughout progress of the Work of this Contract, maintain an accurate record of all changes in the Contract Documents, as described in Article 3.1 below.

B. Upon completion of the Work of this Contract, transfer the recorded changes to a set of Record Documents, as described in Article 3.2 below.

1.2 RELATED WORK DESCRIBED ELSEWHERE

Coordinate with the requirements of Section 01 33 00, SUBMITTAL PROCEDURES

1.3 QUALITY ASSURANCE:

A. General: Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff as approved in advance by the Owner.

B. Accuracy of records: Thoroughly coordinate all changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other Documents where such entry is required to properly show the change. Accuracy of records shall be such that future search for items shown in the Contract Documents may reasonably rely on information obtained from the approved Record Documents.

C. Timing of entries: Make all entries within 24 hours after receipt of information.

1.4 SUBMITTALS

A. General: The Owner's approval of the current status of Record Documents will be a prerequisite to the approval of requests for progress payment and request for final payment under the Contract.

1.5 PRODUCT HANDLING

A. Use all means necessary to maintain the job set of Record Documents completely protected from deterioration and from loss and damage until completion of the Work and transfer of the recorded data to the final Record Documents. In the event of loss of recorded data, use all means necessary to secure data to the Owner's approval; such means include, if necessary in the opinion of the Owner, removal and replacement of concealing materials and, in such case, all replacements shall be to the standards originally specified in the Contract Documents.

PART TWO - PRODUCTS

2.1 RECORD DOCUMENTS:

A. Job set: Promptly following award of contract, secure from the Owner, at no charge to the Contractor, one complete set of all Documents comprising the Contract.

B. Final record documents: At a time near the completion of the Work, secure from the Owner at no charge to the Contractor, one new clean complete set of Drawings included in the Contract.
PART THREE - EXECUTION

3.1 MAINTENANCE OF JOB SET:

A. Identification: Immediately upon receipt of the job set described in Paragraph 2.0.1 above, identify each of the Documents with the title "RECORD DOCUMENTS - JOB SET."

B. Preservation:

1. Considering the Contract completion time, the probable number of occasions upon which the job set must be taken out for new entries and for examination, and the conditions under which these activities will be performed, devise a suitable method for protecting the job set to the approval of the Owner.
2. Do not use the job set for any purpose except entry of new data and for review by the Owner, until start of transfer of data to final Record Documents.
3. Maintain the job set at the site of Work as that site is designated by the Architect.

C. Making entries on Drawings: Using an erasable colored pencil (not ink or indelible pencil), clearly describe the change by note and by graphic line, as required. Date all entries. Call attention to the entry by a "cloud" around the area or areas affected. In the event of overlapping changes, different colors may be used for each of the changes.

D. Making entries on other Documents:

1. Where changes are caused by directives issued by the Owner, clearly indicate the change by note in ink, colored pencil, or rubber stamp.
2. When changes are caused by Contractor originated proposals approved by the Owner, including inadvertent errors by the Contractor which have been accepted by the Owner, clearly indicate the change by note in erasable colored pencil.
3. Make entries in the pertinent Documents as approved by the Owner.

E. Conversion of schematic layouts:

1. In most cases on the Drawings, arrangements of conduits and circuits, piping, ducts and other similar items, is shown schematically and is not intended to portray precise physical layout. Final physical arrangement is determined by the Contractor, subject to the Owner's approval. However, design of future modifications of the facility may require accurate information as to the final physical arrangement of items that are shown only schematically on the Drawings.
2. Shown on the job set of Record Drawings, by dimension accurate to within 24 mm (1"), the center line of each runoff items such as are described in Paragraph 3.01E.1 above. Clearly identify the item by accurate note such as "cast iron drain", "galv. water", etc. Show, by a symbol or note, the vertical location of the item ("under slab", "in ceiling plenum", "exposed", etc.). Make all identification sufficiently descriptive that it may be related reliably to the Specifications.
3. The Owner may waive the requirements for conversion of schematic data, where in the Owner's judgment, such conversion serves no beneficial purpose. However, do not rely upon waivers being issued except as specifically issued in writing by the Owner.
4. Timing of entries: Be alert to changes in the Work from how it is shown in the Contract Documents. Promptly, and in no case later than 24 hours after the change has occurred and been made known to the contractor, make the entries required.
F. Accuracy of entries: Use all means necessary, including the proper tools for measurement, to determine actual locations of the installed items.

3.2 FINAL RECORD DOCUMENTS:

A. General: The purpose of the final Record Documents is to provide factual information regarding all aspects of the Work, both concealed and visible, to enable future modification of design to proceed without lengthy and expensive site measurement, investigation, and examination.

B. Approval of recorded data prior to transfer: Following receipt of the Final Record Set described in Paragraph 2.01.B above, and prior to start of transfer of recorded data thereto, secure a review by the Owner of all recorded data. Make all required revisions.

C. Approval of recorded data prior to transfer: Carefully transfer all change data shown on the job set of Record Drawings to the corresponding Final Record Drawings, coordinating the changes as required, and clearly indicating at each affected detail and other drawing the full description of all changes made during construction and the actual location of items described in Paragraph 3.01.E.1 above. Call attention to each entry by drawing a "cloud" around the area or areas affected. Make all change entries on the Final Record Drawings neatly, consistently, and in ink or crisp black detail.

D. Transfer of data to other Documents: If the Documents other than drawings have been kept clean successfully during progress of the Work, and if entries have been sufficiently orderly thereon to the approval of the Owner, the job set of those Documents (other than Drawings) will be accepted by the Owner as final Record Documents for those Documents. If any such Document is not so approved by the Owner, secure a new copy of that Document from the Owner and carefully transfer the change data to the new copy.

E. Review and approval: Submit the completed total set of Record Documents to the Owner as described in Paragraph 1.04 above. Participate in review meeting or meetings as required by the Owner, make all required changes in the Record Documents and promptly deliver the final Record Documents to the Owner.

3.3 CHANGES SUBSEQUENT TO ACCEPTANCE

A. The Contractor shall have no responsibility for recording changes in the Work subsequent to acceptance of the Work by the Owner, except for changes resulting from replacements, repairs and alterations made by the Contractor as part of this guarantee.

END OF SECTION
SECTION 02 04 03 - CUTTING AND PATCHING FOR BUILDING ENVELOPE

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This Section establishes general requirements pertaining to cutting, fitting, and patching of the non-structural, building envelope work required to:

1. Portions of this work require cutting and/or patching components of the existing facility. This demolition shall be planned, coordinated and completed neatly and safely.

2. Coordinate with the structural modifications and new wall assemblies.

3. Make the several parts fit properly, to accomplish the work within these Construction Documents.

4. Uncover work to provide for installation, inspection, or both, of ill-timed work.

5. Remove and replace work not conforming to requirements of the Construction Documents, defective or substandard work.

6. Remove and replace defective or substandard work.

7. Survey existing conditions, coordinate shutdowns, have qualified craftsmen disconnect necessary plumbing, mechanical and electrical components.

1.2 RELATED REQUIREMENTS

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

B. In addition to other requirements specified, upon the Owners request, uncover work to provide for inspection of covered work by the Owner or Owner’s representative, and remove samples of installed materials for testing.

C. Section 02 05 03: Demolition and Removal for Building Envelope

D. Section 02 82 03: Engineering Control of Asbestos Containing Material

E. Section 03 90 03: Concrete Restoration for Top Deck

F. Section 04 50 03: Select Masonry Replacement Restoration and Cleaning

G. Section 06 10 03: Rough Carpentry for Roofing

H. Section 07 14 03: Concrete Deck Coating for Vehicular Traffic

I. Section 07 55 03: Modified Bitumen Sheet Roofing System

J. Section 07 60 03: Sheet Metal for Building Envelope and Fencing

K. Section 07 91 03: Prefabricated Parking Garage Joints

L. Section 07 92 03: Sealants for Building Envelope

M. Section 08 81 03: Fenestration Replacement
1.3 REFERENCES

A. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):

B. INTERNATIONAL CODE COUNCIL (ICC):

C. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):

D. OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION:
   1. 29 CFR 1926 – Safety and Health Regulations for Construction

E. SOUTH CAROLINA DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL (SCDHEC):
   1. SCDHEC Regulation 61-107.11, Construction, Demolition and Land-Clearing Debris Landfills

F. U.S. ARMY CORPS OF ENGINEERS (USACE):
   1. EM 385-1-1 (2008; Errata 1-2010; Changes 1-3 2010; Changes 4-6 2011) Safety and Health Requirements Manual

1.4 QUALITY ASSURANCE

A. Requirements for Structural Work
   1. General: Do not cut-and-patch structural work in a manner resulting in a reduction of load-carrying capacity or increase in the load/deflection ratio.

   2. Prior to cutting-and-patching the following categories of work, obtain the Owner’s approval to proceed with cutting- and-patching as proposed in the submittal by the Contractor:
      a. Concrete at top deck and at expansion joint.
      b. Masonry (select areas).
      c. Roofing.
      d. Sealants/Prefabricated joints.

B. Operational and Safety Limitations
   1. General: Do not cut-and-patch operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in the manner intended or resulting in decreased operational life, increased maintenance, or decreased safety.
2. Prior to cutting-and-patching the following categories of work, and similar categories where directed, obtain the Owner’s approval to proceed with cutting-and-patching as proposed in the submittal by the Contractor:
   
   a. Coordinate any structural bracing and/or shoring with structural requirements for this project.
   b. Primary operational systems and equipment. (Do not overload system with materials/equipment).
   c. Water / moisture/vapor/air/smoke barriers, membranes and flashings.
   d. Noise and vibration control elements and systems.
   e. Control, communication, mechanical and electrical wiring systems shall be temporarily disconnected, then re-installed immediately.
   f. Protection of building and contents.

3. Contractor is required to maintain system to protect occupants on interior from falling debris, dust, etc. during construction. Contractor is also required to clean all areas where dust or debris exists as a result of construction.

C. Appearance Requirements - General

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

2. Remove and replace work judged by the Owner to be cut-and-patched in a visually unsatisfactory manner.

1.5 SUBMITTALS

A. Submit the following in accordance with Division 01, Submittals.

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

B. Proposals for Cutting and Patching

1. Submit proposed demolition and removal procedures with the cutting and patching procedures to the Owner for approval before work is started.

   a. Include description of why cutting-and-patching cannot (reasonably) be avoided, how it will be performed, how structural elements (if any) will be reinforced, products to be used, firms and tradesmen to perform the work, approximate dates of the work, and anticipated results in terms of variations from the work as originally completed (structural, operational, visual and other qualities of significance).

   b. Where applicable, include cost proposal, suggested alternatives to the cutting and patching procedure proposed, and a description of the circumstances that lead to the need for cutting-and-patching.

2. Approval by Owner to proceed with proposed cutting-and-patching does not waive the right to later require complete removal and replacement of work found to be cut-and-patched in an unsatisfactory manner.
PART 2 - PRODUCTS

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

2.2 PAYMENT FOR COSTS
A. Perform all cutting and patching needed to comply with the Construction Documents at no additional cost to the Owner.

PART 3 - EXECUTION

3.1 CONDITIONS
A. Inspection
   1. Inspect existing conditions, including elements subject to movement or damage during cutting, excavating, backfilling and patching.
   2. After uncovering the work, inspect conditions affecting installation of new work.
B. Discrepancies
   1. If uncovered conditions are not as anticipated, immediately notify the Engineer and secure needed directions.
   2. Do not proceed in areas of discrepancy until all such discrepancies have been fully resolved.

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

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

A. Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.

B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.

C. Provide photograph or videotape documentation of repairs.

D. Locate quantities and show their locations on the applicable drawings.

E. Provide actual used quantities on each Application for Payment request.

END OF SECTION 02 04 03
SECTION 02 05 03 DEMOLITION AND REMOVAL FOR BUILDING ENVELOPE

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes the demolition of the following products/accessories/systems to complete the work.
   1. Function, access and usage of the facility shall be maintained during the demolition and construction process.
   2. Disconnect, relocate, remove and re-install any interior items required to complete the work.
   3. Preparation of substrates to receive repairs in accordance with Section 07 60 03. Removal of all loose, peeling or otherwise deteriorated materials to provide smooth, uniform, compatible and sound substrate.
   4. Removal of selective areas of sealants on the systems and adjacent wall surfaces for replacement in accordance with Section 07 92 03, Sealants for Building Envelope.

B. Contractor shall immediately notify the Consultant/Engineer and the Owner, in writing, when conditions are uncovered which will affect or deter completion of the work in accordance with the Contract Documents.

C. All demolition shall adhere to ANSI, SCDHEC, and OSHA guidelines.

D. Unit prices and set quantities are included for various items and documentation is required accordingly.

1.2 RELATED REQUIREMENTS

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

B. Section 02 04 03: Cutting and Patching for Building Envelope

C. Section 02 05 03: Demolition and Removal for Building Envelope

D. Section 02 82 03: Engineering Control of Asbestos Containing Material

E. Section 03 90 03: Concrete Restoration for Top Deck

F. Section 04 50 03: Select Masonry Replacement Restoration and Cleaning

G. Section 06 10 03: Rough Carpentry for Roofing

H. Section 07 14 03: Concrete Deck Coating for Vehicular Traffic

I. Section 07 55 03: Modified Bitumen Sheet Roofing System

J. Section 07 60 03: Sheet Metal for Building Envelope and Fencing

K. Section 07 91 03: Prefabricated Parking Garage Joints

L. Section 07 92 03: Sealants for Building Envelope

M. Section 08 81 03: Fenestration Replacement
1.3 REFERENCES

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

B. AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI):
   1. ANSI/ASSE A10.6 (2006) Safety Requirements for Demolition Operations

C. INTERNATIONAL CODE COUNCIL (ICC):

D. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):

E. OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
   1. 29 CFR 1926 – Safety and Health Regulations for Construction

F. SOUTH CAROLINA DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL (SCDHEC):
   1. SCDHEC Regulation 61-107.11, Construction, Demolition and Land-Clearing Debris Landfills

G. U.S. ARMY CORPS OF ENGINEERS (USACE):
   1. EM 385-1-1 (2008; Errata 1-2010; Changes 1-3 2010; Changes 4-6 2011) Safety and Health Requirements Manual

1.4 GENERAL REQUIREMENTS

A. Do not begin demolition until Demolition plan is approved and authorization is received from the Consultant/Engineer.

B. Remove rubbish and debris from the site daily; do not allow accumulation around the building or grounds.

C. Coordinate sequencing and temporary shutdowns with occupants and owner.

1.5 SUBMITTALS

A. Submit the following in accordance with Division 01, Submittals.

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

1. Submit proposed demolition and removal procedures to the Consultant/Engineer for approval before work is started.

2. Include procedures for careful removal and disposition of materials while function of building is maintained, a disconnection schedule of effected utility services, and a detailed description of methods and equipment to be used for each operation and of the sequence of operations.

3. State safety precautions to be used during conduct of demolition work

1.6 REGULATORY AND SAFETY REQUIREMENTS

A. Comply with federal, state, and local hauling and disposal regulations.

1. In addition to the requirements of the contract clauses, safety requirements shall conform to ANSI A10.6, "Demolition Operations - Safety Requirements" and applicable OSHA requirements.

B. Contractor shall assure compliance with applicable safety and fall protection requirements of federal, state and local regulations throughout performance of work.

C. The Contractor shall make application to all necessary Building Officials/governing bodies and obtain the required permits for work.

1.7 DUST AND DEBRIS CONTROL

A. Provide adequate protection of areas which will be subject to demolition debris and dust.

B. Contractor shall monitor interior and adjacent spaces during the demolition process.

C. Prevent the spread of dust and debris to the interior portions of the building, to the surrounding grounds, and avoid the creation of a nuisance or hazard in the surrounding area.

D. Removal of existing work shall be coordinated not to affect current building occupants.

E. Care shall be taken not to damage existing components or overload assembly with construction traffic, debris or equipment.

1.8 PROTECTION

A. Traffic Control Signs: Where pedestrian safety is endangered in the area of removal work, use traffic barricades with flashing lights.

B. Ingress/Egress Protection:

1. During the construction period, exits from the building(s) shall not be blocked or impaired without expressed approval of the Agency Life, Safety/Fire Protection Officer

2. Overhead protection and traffic control signs required at all ingress/egress points affected by this work.

C. Existing Work:

1. Protect existing work, which is to remain in place or be reused.
2. The Contractor shall particularly ensure protection to grass, shrubbery and all concrete surfaces.

3. Repair items, which are to remain and which are damaged during performance of the work to their original condition or replace with new.

4. Do not overload existing structural system.

5. Interior:
   a. The interior of the building shall be protected at all times from dust, debris, materials and equipment associated with the roof construction.
   b. Safety, the uninterrupted function of the building and the protection of the interior contents shall be maintained at all times.
   c. Disconnect, relocate, remove and re-install any interior items required to complete the work.

D. Weather Protection:
   1. For portions of the building to remain, protect building interior and materials and equipment from the weather at all times.
   2. When removal of the existing components is accomplished, have the materials and workmen ready to provide adequate and temporary covering of exposed areas during inclement weather and at the end of each day's construction.

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

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

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

PART 2 - PRODUCTS

(Not Applicable)
PART 3 - EXECUTION

3.1 EXISTING FACILITIES

A. Existing Facilities are to be removed as specified, noted or as necessary to accomplish work.

B. Roofing:
   1. Remove the selective components as specified to complete the work.
   2. Remove selective components and associated accessories without damage to the existing roof system to remain in place.

C. Wall and Garage Expansion Joints
   1. Remove the selective components as specified to complete the work.
   2. Remove selective components and associated accessories without damage to the existing concrete traffic surface or pre-cast concrete wall panels in accordance with Section 07 60 03, Sheet Metal and Section 07 92 03, Sealants for Building Envelope.

3.2 DISPOSITION OF MATERIALS

A. Title of Materials:
   1. Except where specified in other sections, all materials and equipment removed, and not reused, shall become the property of the Contractor and shall be removed from the job site.
   2. Title to the materials resulting from demolition, and materials and equipment removed, is vested in the Contractor upon approval by the Consultant/Engineer of the Contractor's demolition and removal procedures, and authorization by the Consultant/Engineer to begin demolition.
   3. The Owner will not be responsible for the condition or loss of, or damage to, such property after notice to proceed.

B. Reuse of Materials and Equipment:
   1. Remove and store materials and equipment to be reused to prevent damage, and reinstall as the work progresses.

3.3 CLEANUP

A. Remove and transport debris and rubbish in a manner that will prevent spillage on streets or adjacent areas.

B. Limit to 3/8 cubic yard capacity buggies or other conveyances used on the roofs to transport debris to chute locations.

3.4 UNIT PRICED QUANTITIES

A. Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.

B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.
C. Provide photograph or videotape documentation of repairs.

D. Locate quantities and show their locations on the drawings.

E. Provide actual used quantities on each Application for Payment request.

END OF SECTION 02 05 03
SECTION 02 82 03 - ENGINEERING CONTROL OF ASBESTOS CONTAINING MATERIALS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide for the proper removal and disposal of all asbestos containing roofing materials (ACRM) in the roof membrane, strip and base flashing, mastics, asphaltic coatings and cements of the designated roof areas A, B and C. These materials are currently “non friable.” The Contractor shall adhere to all aspects of this section, with every effort not to render these materials “friable” in the removal and disposal process. Materials rendered friable shall be removed in accordance with the further criteria of this section at no additional costs.

B. If these materials are rendered friable by the Contractor, the work covered by this section includes the handling and control of asbestos containing materials and describes some of the resultant procedures and equipment required to protect workers, the environment and occupants of the building or area, or both, from contact with airborne asbestos fibers. The work also includes the disposal of any asbestos containing materials generated by the work. More specific operational procedures shall be outlined in the Asbestos Hazard Abatement Plan called for elsewhere in this specification. The materials required for removal and disposal are non friable, asbestos containing roofing materials. However, during demolition and removal, powered cutting machines will render the material friable. Roofing materials must be removed in accordance with the requirements of state and local regulatory agency, its regulations and 29 CFR 1926.1101. The method of removal must be selected that provides the best control during abatement at the most reasonable cost.

C. Based on core samples and site inspection made by ADC Engineering, Inc. and the attached report, removal of all roofing materials, strip and base flashings, mastic, asphaltic coatings and cements as non-friable asbestos containing roof materials is required.

D. Contractor shall adhere to all SCDHEC requirements including “Notice of Demolition” and “Notice of Asbestos Renovation Project”.

E. Provide temporary repairs to all areas until work is completed. Building shall remain watertight and protected from the elements at all times.

1.2 RELATED REQUIREMENTS

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

B. Section 02 04 03: Cutting and Patching for Building Envelope

C. Section 02 05 03: Demolition and Removal for Building Envelope

1.3 REFERENCES

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

B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
   1. ANSI Z88.2 (1992) Respiratory Protection
C. ASTM INTERNATIONAL (ASTM):

2. ASTM D 1331 (2001) Surface and Interfacial Tension of Solutions of Surface-Active Agents

D. CODE OF FEDERAL REGULATIONS (CFR)

1. 29 CFR 1926.103 - Respiratory Protection
2. 29 CFR 1926.51 – Sanitation
3. 29 CFR 1926.200 - Accident Prevention Signs and Tags
4. 29 CFR 1926.59 - Hazard Communication
5. 29 CFR 1926.1101 - Asbestos, Tremolite, Anthophyllite, Actinolite
7. 40 CFR 61-SUBPART M - National Emission Standard for Asbestos
8. 40 CFR 763 - Asbestos Containing Material in Schools

E. ENVIRONMENTAL PROTECTION AGENCY (EPA)

1. EPA 560/5-85-024 - Guidance for Controlling Asbestos Containing Materials in Buildings

1.4 GOVERNMENT DIRECTIVES (GD)

A. ND OPNAVINST 5100.23 (Rev. D) Navy Occupational Safety and Health (NAVOSH) Program Manual

B. UNDERWRITERS LABORATORIES INC. (UL)

1. UL 586 (Latest Edition) High-Efficiency, Particulate, Air Filter Units
C. U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:


H. Specifications for Accident Prevention Signs and Tags: Title 29, 1910, Section 145 of the Code of Federal Regulations.

I. South Carolina Department of Health and Environmental Control (SCDHEC)

1. Notification for Demolition Form.

2. Notification for Renovation Form.

3. Specific Guidelines:
   a. Regulation 61-86.1 Standards of Performance for Asbestos Abatement Operations
   b. Roofing ACM Survey protocols and work practice procedures, published by AHP Research, Inc.
   c. Asbestos Containing Materials (ACM)
   d. Asbestos Containing Roofing Materials (ACRM)

4. S.C. Code of Laws Title 44 Chapter 87 Asbestos Abatement License:
   a. SECTION 44-87-20. License required for each asbestos abatement project.
     1) Asbestos abatement entities performing asbestos projects shall, before beginning work on a project, obtain an asbestos abatement license from the department. The license must be obtained for each project.

1.5 DEFINITIONS

A. ACM: Asbestos Containing Materials.

B. ACRM: Asbestos Containing Roofing Materials, Non-friable.

C. Amended Water:

1. Water containing a wetting agent or surfactant with a maximum surface tension of 29 dynes per centimeter when tested in accordance with ASTM D 1331.
D. Area Sampling:
   1. Sampling of asbestos fiber concentrations, which approximates the concentrations of asbestos in the theoretical breathing zone but is not actually collected in the breathing zone of an employee.

E. Asbestos:
   1. The term asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, and actinolite asbestos and any of these minerals that has been chemically treated or altered. Materials are considered to contain asbestos if the asbestos content of the material is determined to be at least one percent.

F. Asbestos Control Area:
   1. That area where asbestos removal operations are performed which is isolated by physical boundaries, which assist in the prevention of the uncontrolled release of asbestos dust, fibers, or debris.

G. Asbestos Fibers:
   1. Those fibers having an aspect ratio of at least 3:1 and longer than 5 micrometers as determined by National Institute for Occupational Safety and Health (NIOSH) Method 7400.

H. Asbestos Permissible Exposure Limit:
   1. 0.1 fibers per cubic centimeter of air as an 8-hour time weighted average measured in the breathing zone as defined by 29 CFR 1926.1101 or other Federal legislation having legal jurisdiction for the protection of workers health.

I. Background:
   1. The ambient airborne asbestos concentration in an uncontaminated area as measured prior to any asbestos hazard abatement efforts. Background concentrations for other (contaminated) areas are measured in similar but asbestos free locations.

J. Contractor:
   1. The Contractor is that individual, or entity under contract to the Owner to perform the herein listed work.

K. Encapsulation:
   1. The abatement of an asbestos hazard through the appropriate use of chemical encapsulants.

L. Encapsulants:
   1. Specific materials in various forms used to chemically or physically entrap asbestos fibers in various configurations to prevent these fibers from becoming airborne. There are four types of encapsulants as follows, which must comply with performance requirements as specified herein.
      a. Removal Encapsulant (can be used as a wetting agent)
b. Bridging Encapsulant (used to provide a tough, durable surface coating to asbestos containing material)

c. Penetrating Encapsulant (used to penetrate the asbestos containing material, encapsulating all asbestos fibers and preventing fiber release due to routine mechanical damage)

d. Lock-Down Encapsulant (used to seal off or "lock-down" minute asbestos fibers left on surfaces from which asbestos containing material has been removed).

M. Friable Asbestos Material:

1. One percent asbestos containing material that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

N. Glovebag Technique:

1. Those asbestos removal and control techniques put forth in 29 CFR 1926.1101 Appendix G.

O. HEPA Filter Equipment:

1. High efficiency particulate air (HEPA) filtered vacuum and/or exhaust ventilation equipment with a filter system capable of collecting and retaining asbestos fibers. Filters shall retain 99.97 percent of particles 0.3 microns or larger as indicated in UL 586.

P. Owner Consultant (OC):

1. That qualified person, employed directly by the Owner to monitor, sample, inspect the work or in some other way advise the Owner. The OC is normally a private consultant, but can be an employee of the Owner.

Q. Negative Pressure Enclosure (NPE):

1. That engineering control technique described as a negative pressure enclosure in 29 CFR 1926.1101.

R. Non-friable Asbestos Material:

1. Material that contains asbestos in which the fibers have been immobilized by a bonding agent, coating, binder, or other material so that the asbestos is well bound and will not normally release asbestos fibers during any appropriate use, handling, storage or transportation. It is understood that asbestos fibers may be released under other conditions such as demolition, removal, or mishap. This includes asbestos containing roofing materials, unless and noted otherwise.

S. Personal Sampling:

1. Air sampling, which is performed to determine asbestos fiber concentrations within the breathing zone of a specific employee, as performed in accordance with 29 CFR 1926.1101.

T. Private Qualified Person (PQP):

1. That qualified person hired by the Contractor to perform the herein listed tasks.
U. Qualified Person (QP):

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

V. TEM:

1. Refers to Transmission Electron Microscopy.

W. Time Weighted Average (TWA):

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

X. Wetting Agent:

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

1.6 SUBMITTALS

A. Submit the following in accordance with Division 01, Submittals.

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

C. For projects involving non-friable, asbestos containing roofing materials, to be removed and disposed of without rendering them friable. The following submittals are required.

1. Submit a detailed plan for the proper removal of non-friable asbestos containing roofing materials, and planned action if materials are rendered friable.

2. Copy of SCDHEC Notification for Demolition Form.

3. Copy of SCDHEC Notification for Asbestos Renovation Project.

4. Submit written evidence that the landfill for disposal is approved for asbestos disposal by the state and local regulatory agency. Submit to the owner, waste shipment records, prepared in accordance with Federal regulations, signed and dated by an agent of the landfill, certifying containing materials delivered to the landfill within three (3) days of delivery. In those States that require a hazardous waste manifest the contractor shall submit, within three (3) days, signed copies of such to the owner.

D. For projects involving friable asbestos containing materials or non-friable materials, which are rendered friable by the contractor. The following requirements shall be met.

1. Submit a detailed plan for the safety precautions such as lockout, tagout, tryout, fall protection, and confined space entry procedures and equipment and work procedures to be
used in the removal and demolition of materials containing asbestos. The plan, not to be combined with other hazard abatement plans, shall be prepared, signed, and sealed by the PQP. Provide a Table of Contents for each abatement submittal, which shall follow the sequence of requirements in the contract. Such plan shall include but not be limited to the precise personal protective equipment to be used including, but not limited to, respiratory protection, type of whole-body protection and if the location of asbestos control areas including clean and dirty areas, buffer zones, showers, storage areas, change rooms, removal method, interface of trades involved in the construction, sequencing of asbestos related work, disposal plan, type of wetting agent and asbestos sealer to be used, locations of local exhaust equipment, planned air monitoring strategies, and a detailed description of the method to be employed in order to control environmental pollution. The plan shall also include (both fire and medical emergency) response plans. The Asbestos Hazard Abatement Plan must be approved in writing prior to starting any asbestos work. The Contractor, Asbestos Hazard Control Supervisor, and PQP shall meet with the Owner prior to beginning work, to discuss in detail the Asbestos Hazard Abatement Plan, including work procedures and safety precautions. Once approved by the Owner, the plan will be enforced as if an addition to the specification. Any changes required in the specifications as a result of the plan; shall be identified specifically in the plan to allow for free discussion, and approval by the Owner prior to starting work.

2. Landfill Approval:
   a. Submit written evidence that the landfill for disposal is approved for asbestos disposal by the state and local regulatory agency. Submit to the Owner, waste shipment records, prepared in accordance with Federal regulations, signed and dated by an agent of the landfill, certifying the amount of asbestos materials delivered to the landfill, within 3 days after delivery. In those States that require a hazardous waste manifest the Contractor shall submit, within 3 days, signed copies of such to the Owner.

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

4. Testing Laboratory:
   a. Submit the name, address, and telephone number of each testing laboratory selected for the sampling, analysis, and reporting of airborne concentrations of asbestos fibers along with certification that each laboratory is American Industrial Hygiene Association (AIHA) accredited and that persons counting the samples have been judged proficient by current inclusion on the AIHA Asbestos Analysis Registry (AAR) and successful participation of the laboratory in the Proficiency Analytical Testing (PAT) Program. Where analysis to determine asbestos content in bulk materials or transmission electron microscopy is required, submit evidence that the laboratory is accredited by the National Institute of Science and Technology
5. Private Qualified Person Documentation:
   a. Submit the name, address, and telephone number of the Private Qualified Person (PQP) selected to prepare the Asbestos Hazard Abatement Plan, direct monitoring and training, and documented evidence that the PQP has successfully completed training in and is accredited and where required is certified as, a Building Inspector, Contractor/Supervisor Abatement Worker, and Asbestos Project Designer as described by 40 CFR 763 and has successfully completed the National Institute of Occupational Safety and Health (NIOSH) 582 course "Sampling and Evaluating Airborne Asbestos Dust" or equivalent. The PQP shall be appropriately licensed in the State of South Carolina.

6. Medical Certification:
   a. Provide a written certification for each worker and supervisor, signed by a licensed physician indicating that the worker and supervisor has met or exceeded all of the medical prerequisites listed herein and in 29 CFR 1926.1101 and 29 CFR 1926.103 as prescribed by law. Submit certificates prior to the start of work but after the main abatement submittal.

7. Respiratory Protection Program:
   a. Submit a written program manual or operating procedure including methods of compliance with regulatory statutes.

8. Field Test Reports:
   a) Air sampling results
   b) Pressure differential recordings for local exhaust system.
   c) Asbestos disposal quantity report.
   d) Encapsulation test patches.
   e) Air Sampling Results: Complete fiber counting and provide results to the PQP and OC for review within 16 hours of the "time off" of the sample pump. Notify the Owner immediately of any airborne levels of asbestos fibers in excess of the acceptable limits. Submit sampling results to the Owner and the affected Contractor employees where required by law within 3 working days, signed by the testing laboratory employee performing air sampling, the employee that analyzed the sample, and the PQP and OC. Notify the Contractor and the Owner immediately of any variance in the pressure differential which could cause adjacent unsealed areas to have asbestos fiber concentrations in excess of 0.01 fibers per cubic centimeter or background whichever is higher. In no circumstance shall levels exceed 0.1 fibers per cubic centimeter.

9. Records:
   a. Notifications
b. Rental equipment

c. Respirator program records

d. Permits and licenses

e. Notifications:

1) Notify the Owner and appropriate Government agencies in writing 14 working days prior to the start of asbestos work as indicated in applicable laws, ordinances, criteria, rules, and regulations.

f. Rental Equipment:

1) Provide a copy of the written notification to the rental company concerning the intended use of the equipment and the possibility of asbestos contamination of the equipment.

g. Respirator Program Records:

1) Submit records of the respirator program as required by ANSI Z88.2, 29 CFR 1926.103, and 29 CFR 1926.1101.

10. Manufacturer's Catalog Data:

a. Local exhaust equipment

b. Vacuums

c. Respirators

d. Pressure differential automatic recording instrument.

e. Amended water

f. Glovebags

g. Safety Data Sheets (SDS) for all materials proposed for transport to the project site.

h. Encapsulants

11. Statements:

a. Asbestos hazard abatement plan

b. Testing laboratory

c. Private qualified person documentation

d. Landfill approval

e. Employee training

f. Medical certification requirements
g. Waste shipment records and if applicable exemption report
h. Respiratory Protection Program
i. Hazardous waste manifest

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

1.7 REQUIREMENTS

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

   2. Obtain and complete all necessary SCDHEC forms and notification.

B. Environment, Safety and Health Compliance:
   1. In addition to detailed requirements of this specification, comply with those applicable laws, ordinances, criteria, rules, and regulations of Federal, State, regional, and local authorities regarding handling, storing, transporting, and disposing of asbestos waste materials. Comply with the applicable requirements of the current issue of 29 CFR 1926.1101, 40 CFR 61-SUBPART A, 40 CFR 61-SUBPART M, and ND OPNAVINST 5100.23. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting the work. Where the requirements of this specification, applicable laws, rules, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirement as defined by the Government shall apply. The following laws, ordinances, criteria, rules and regulations regarding removal, handling, storing, transporting and disposing of asbestos materials apply.

   2. Adhere to all OSHA guidelines specific to asbestos containing materials and asbestos containing roofing materials.

C. Training:
   1. Train all personnel involved in the asbestos control work in accordance with United States Environmental Protection Agency (USEPA) Asbestos Hazard Emergency Response Act (AHERA) training criteria or State training criteria whichever is more stringent. The Contractor shall document the training by providing: dates of training, training entity,
course outline, names of instructors, and qualifications of instructors upon request by the Owner. Furnish each employee with respirator training and fit testing administered by the PQP as required by 29 CFR 1926.1101. Fully cover engineering and other hazard control techniques and procedures.

D. Medical Requirements:

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

E. Medical Examinations:

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

2. Medical Records:

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

F. Respiratory Protection Program:

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

G. Asbestos Hazard Control Supervisor:

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

H. Hazard Communication:

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

PART 2 - PRODUCTS

Not Used.
PART 3 - EXECUTION

3.1 ASBESTOS CONTAINING ROOFING MATERIAL (NON-FRIABLE)

A. The asbestos containing roofing materials for this project are currently non-friable, as noted in the "Summary" of this section, and the contractor shall remove and dispose of these materials in accordance with SCDHEC requirements.

B. If these materials are rendered friable during this project, the contractor shall adhere to the further requirements of this section at no additional costs.

3.2 ASBESTOS CONTAINING ROOFING MATERIAL (FRIABLE)

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

3.3 EQUIPMENT

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

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

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

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

   b. Work Clothing:
      1) Provide cloth work clothes for wear under the outer protective clothing and foot coverings and either dispose of or properly decontaminate them as recommended by the PQP after each use.
c. Personal Decontamination Unit:

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

d. Eye Protection:

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

4. Warning Signs and Labels:

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

b. Warning Sign:

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

<table>
<thead>
<tr>
<th>Legend</th>
<th>Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>one inch Sans Serif</td>
</tr>
<tr>
<td></td>
<td>Gothic or Block</td>
</tr>
<tr>
<td>Asbestos</td>
<td>one inch Sans Serif</td>
</tr>
<tr>
<td></td>
<td>Gothic or Block</td>
</tr>
<tr>
<td>Cancer and Lung Disease Hazard</td>
<td>1/4-inch Sans Serif</td>
</tr>
</tbody>
</table>
Gothic or Block

Authorized Personnel Only 1/4-inch Gothic

Respirators and Protective 1/4-inch Gothic

Clothing are Required in this Area

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

c. Warning Labels:

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

DANGER

CONTAINS ASBESTOS FIBERS

AVOID CREATING DUST

CANCER AND LUNG DISEASE HAZARD

BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM

6. Tools:

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

7. Rental Equipment:

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

3.4 WORK PROCEDURE

A. Removal, disposal, and documentation shall adhere to SCDHEC and all applicable government regulations, for non-friable asbestos containing roofing materials.

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

1. Protection of Existing Work to Remain:
   a. Perform work without damage or contamination of adjacent work. Where such work is damaged or contaminated as verified by Owner using visual inspection or sample analysis, it shall be restored to its original condition or decontaminated by the Contractor at no expense to the Owner as deemed appropriate by the Owner. This includes inadvertent spill of dirt, dust, or debris in which it is reasonable to conclude that asbestos may exist. When these spills occur, stop work immediately. Then clean up the spill. When satisfactory visual inspection and air sampling results are obtained from the PQP work may proceed at the discretion of the Owner.

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

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

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

b. Field Testing:
   1) Field test the encapsulation test patches in accordance with ASTM E 1494, paragraph "Required Field Test," in the presence of the Owner. Keep a written record of the testing procedures and test results. Upon successful
testing of the encapsulant, submit a signed statement to the Owner certifying that the encapsulant is suitable for installation on the particular asbestos containing material.

c. Large-Scale Application:

   1) Apply encapsulant using the same equipment and procedures as employed for the test patches. Keep the encapsulant material stirred to prevent settling. Keep a clean work area. Change pre-filters in the ventilation equipment as soon as they appear clogged by encapsulant aerosol or pressure differential drops below 0.02 Hg.

5. Air Sampling:

   a. Sampling of airborne concentrations of asbestos fibers shall be performed in accordance with 29 CFR 1926.1101 and as specified herein. Sampling performed in accordance with 29 CFR 1926.1101 shall be performed by the PQP. Sampling performed for environmental and quality control reasons shall be performed by the PQP. Unless otherwise specified, use NIOSH Method 7400 for sampling and analysis. Monitoring may be duplicated by the Owner at the discretion of the Owner. If the air sampling results obtained by the Owner differ from those results obtained by the Contractor, the Owner will determine which results predominate.

   b. Sampling During Asbestos Work:

      1) The PQP shall provide personal monitoring as required by 29 CFR 1926.1101. The NC shall provide daily area air sampling in the work area, downwind at the perimeter of the regulated area and inside the building at areas beneath the roof removal work. If any area or personal samples exceed 0.01 fibers per cubic centimeter, stop all work, correct the condition causing the increase, and notify the Owner immediately.

6. Site Inspection:

3.5 CLEAN-UP AND DISPOSAL

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

B. Housekeeping procedures shall be modified if friable or rendered friable.

   1. Essential parts of asbestos dust control are housekeeping and clean-up procedures. Maintain surfaces of the asbestos control area free of accumulations of asbestos fibers. Give meticulous attention to restricting the spread of dust and debris; keep waste from being distributed over the general area. Use HEPA filtered vacuum cleaners. DO NOT BLOW DOWN THE SPACE WITH COMPRESSED AIR. When asbestos removal is complete, all asbestos waste is removed from the work-site, and final clean-up is completed, the Owner will attest that the area is safe before the signs can be removed.

C. Title to materials for non-friable and friable materials.

   1. All waste materials, except as specified otherwise, shall become the property of the Contractor and shall be disposed of as specified in applicable local, State, and Federal regulations and herein.
D. Disposal of Asbestos:

1. Non-friable ACRM materials shall be collected, labeled, and disposed of in accordance with SCDHEC requirements.

2. Procedure for disposal of friable materials:

   a. Collect asbestos waste, asbestos contaminated water, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing which may produce airborne concentrations of asbestos fibers and place in sealed fiber-proof, waterproof, non-returnable containers (e.g. double plastic bags 6 mils thick, cartons, drums or cans). Wastes within the containers must be adequately wet in accordance with 40 CFR 61-SUBPART M. Affix a warning and Department of Transportation (DOT) label to each container including the bags or use at least 6 mils thick bags with the approved warnings and DOT labeling preprinted on the bag. The name of the waste generator and the location at which the waste was generated shall be clearly indicated on the outside of each container. Prevent contamination of the transport vehicle (especially if the transport vehicle is a rented truck likely to be used in the future for non-asbestos purposes). These precautions include lining the vehicle cargo area with plastic sheeting (similar to work area enclosure) and thorough cleaning of the cargo area after transport and unloading of asbestos debris is complete. Dispose of waste asbestos material at an Environmental Protection Agency (EPA) or State-approved asbestos landfill off Government property. For temporary storage, store sealed impermeable bags in asbestos waste drums or skids. An area for interim storage of asbestos waste-containing drums, or skids, will be assigned by the Owner, or his authorized representative. Procedure for hauling and disposal shall comply with 40 CFR 61-SUBPART M, State, regional, and local standards. Sealed plastic bags may be dumped from drums into the burial site unless the bags have been broken or damaged. Damaged bags shall remain in the drum and the entire contaminated drum shall be buried. Uncontaminated drums may be recycled. Workers unloading the sealed drums shall wear appropriate respirators and personal protective equipment when handling asbestos materials at the disposal site.

   b. Asbestos Disposal Quantity Report:

      1) Direct the PQP to record and report, to the Owner, the amount of asbestos containing material removed and released for disposal.

      2) Deliver the report for the previous day at the beginning of each day shift with amounts of material removed during the previous day reported in linear feet or square feet as described initially in this specification and in cubic feet for the amount of asbestos containing material released for disposal.

      3) Allow the OC to inspect, record and report the amount of asbestos containing material removed and released for disposal on a daily basis.

      4) While performing asbestos engineering control work, the Contractor shall be subject to on-site inspection by the Owner who may be assisted by or represented by safety or industrial hygiene personnel. If the work is found to be in violation of this specification, the Owner or his representative will issue a stop work order to be in effect immediately and until the violation is resolved. All related costs including standby time required to resolve the violation shall be at the Contractor's expense.
SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART ONE - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies cast-in-place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes. It also includes concrete repair work shown on the drawings.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 5 Section “Structural Steel” for embedded items.

C. A set quantity is required for concrete repairs, including crack repair and repair of spall or pits in the slabs. These quantities are to be included in the base bid as listed in the Unit Prices Attachment. Any quantities above or below the set quantity shall result in an add or deduct to the Contract Sum based on the unit prices provided.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.4 SUBMITTALS

A. Product Data: For each type of manufactured material and product, including reinforcement and forming accessories, admixtures, corrosion inhibitors, patching compounds, joint systems, curing compounds, and others as requested by the Architect.

B. Design Mixes: For each concrete mix, including test reports. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mix water to be withheld for later addition at Project site.

D. Steel Reinforcement Shop Drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement.” Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

E. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:

1. Cementitious materials and aggregates.
2. Form – release agents.

3. Steel reinforcement and reinforcement accessories.

4. Admixtures.

5. Curing materials.


7. Adhesives.

8. Vapor retarders.


11. Floor and slab treatments.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer must be certified according to the National Ready Mixed Concrete Association’s Certification of Ready Mixed Concrete Production Facilities.

C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1 according to ACI CP-1 or an equivalent certification program.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.

E. ACI Publications: Comply with the following, unless more stringent provisions are indicated:

1. ACI 301, "Specification for Structural Concrete."

2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

3. ACI 318, “Building Code Requirements for Reinforced Concrete.”

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle steel reinforcement to prevent bending and damage.
PART TWO - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Forms for Exposed Finish Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints. Form facing panels to be constructed of plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials.

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

D. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal or fiberglass form ties, designed to prevent form deflection and to prevent spalling concrete upon removed. Provide units that will leave end no closer than 1 inch to the exposed surface. Provide ties that when removed, will leave holes no larger than 1 inch in diameter at the concrete surface.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

B. Plain-Steel Wire: ASTM A 82, as drawn.

C. Plain-Steel Welded Wire Fabric: ASTM A185, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
   1. For concrete surfaces where legs of supports are in contact with form, provide supports with legs that are protected by plastic (CRSI, Class 1) or stainless steel (CRSI, Class 2).

2.4 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I.
   1. Fly Ash: ASTM C 618, Class C or F.

B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:
   1. For beams, slabs, columns and walls nominal maximum aggregate size shall be 3/4 inch.
2. For foundations, nominal maximum aggregate size shall be 1 inch.

3. For ground floor slab, maximum aggregate size shall be 1 inch.

C. Water: Potable and complying with ASTM C 94.

2.5 ADМИXTURES

A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.


C. Water-Reducing Admixture: ASTM C 494, Type A.

D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.

E. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.

F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

2.6 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Liquid Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class A.

2.7 RELATED MATERIALS

A. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

B. Epoxy-Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements, and as follows:

1. Type II, non-load bearing, for bonding freshly mixed concrete to hardened concrete.

2. Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

3. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

C. Sealers: Joint Sealers shall be as specified in Division 7.
D. Concrete Patching Material:
   1. SikaTop 122 Plus two-component high performance repair mortar, or approved equal, for horizontal surfaces.
   2. SikaTop 123 Plus two-component high performance non-sag repair mortar, or approved equal, for vertical and overhead surfaces.

E. Concrete Reinforcement Bonding Agent:
   1. Sika Armatec 110 EpoCem bonding agent and reinforcement protection, or approved equal.

2.8 CONCRETE MIXES

A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test databases, as follows:
   1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.

B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.

C. Curbs: Proportion normal-weight concrete mix as follows:
   2. Maximum Slump: 4 inches (100 mm).
   3. Maximum Slump for Concrete Containing High-Range Water-Reducing Admixture: 8 inches after admixture is added to concrete with 2 to 4 inch slump.

D. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement as follows:
   1. Fly Ash: 25 percent

E. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 2 to 4 percent, unless otherwise indicated. Do not air entrain concrete to trowel-finished interior floors and suspended slabs or toppings. Do not allow entrapped air content to exceed 3 percent.

F. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

G. Admixtures: Use admixtures according to manufacturer's written instructions.
   1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
   2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
   3. Use water-reducing admixture in pumped concrete and concrete with a water-cementitious materials ratio below 0.50.
2.9 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART THREE - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class A, 1/8 inch (3 mm) at exposed finish surfaces such as exposed concrete beams, columns and walls.

2. Class B, 1/4 inch (13 mm) at all other locations.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.

1. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

H. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

I. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
J. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 REMOVING AND REUSING FORMWORK

A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.

B. Leave formwork, for beam soffits, joists, slabs, and other structural elements, that supports weight of concrete in place until concrete has achieved the following:

1. 28-day design compressive strength.

2. Determine compressive strength of in-place concrete by testing representative field-laboratory-cured test specimens according to ACI 301.

3. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

C. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

D. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORES AND RESHORES

A. Comply with ACI 318 (ACI 318M), ACI 301, and recommendations in ACI 347R for design, installation, and removal of shoring and reshoring.

3.5 VAPOR RETARDERS

A. Vapor Retarder: Place, protect, and repair vapor-retarder sheets according to ASTM E 1643 and manufacturer's written instructions.

3.6 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

1. Install welded wire fabric in longest practicable lengths for bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.7 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, except where indicated otherwise.

2. Form from bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1 inch into concrete.

3. Locate joints for beams and slabs in the middle third of spans.

4. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

3.8 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Before placing concrete, water may be added at Project site, subject to limitations of ACI 301 and subject to limits of maximum water/cement ratios listed.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mix.

C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.

D. Deposit concrete in forms in horizontal layers no deeper than 24 inches (600 mm) and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.

1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.

2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches (150 mm) into
preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.

E. Deposit and consolidate concrete for slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.


3. Screed slab surfaces with a straightedge and strike off to correct elevations.

4. Slope surfaces uniformly to drains where required.

5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.

2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.

G. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.9 FINISHING FORMED SURFACES
3.10 FINISHING FLOOR SLABS AND SURFACES

A. General: Comply with recommendations in ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces indicated and to surfaces to receive trowel or light trowel finish.

C. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to all slab surfaces, unless noted otherwise.

2. Finish surfaces to the following tolerances, measured within 24 hours according to ASTM E 1155/E 1155M for a randomly trafficked floor surface:

   a. Specified overall values of flatness, F(F) 35; and levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and levelness, F(L) 17; for slabs on grade.

   b. Specified overall values of flatness, F(F) 30; and levelness, F(L) 20; with minimum local values of flatness, F(F) 24; levelness F(L) 15; for elevated slabs.

D. Light Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.

1. Finish surfaces to the following tolerances, measured within 24 hours according to ASTM E 1155/E 1155M for a randomly trafficked floor surface:

   a. Specified overall values of flatness, F(F) 25; and levelness, F(L) 20; with minimum local values of flatness, F(F) 20; and levelness, F(L) 17.
E. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after first troweling. While concrete is still plastic, slightly scarify the surface with a fine broom.

1. Apply trowel and fine broom finish to slabs to receive a bonded concrete topping or where quarry or ceramic tile is to be installed by either the thickset or thin-set method.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.11 REPAIRING AND PATCHING PITS AND SPALLS IN CONCRETE

A. At pits without exposed reinforcing:

1. Clean pit(s) free of all loose aggregate, dirt, oil and any and all bond inhibiting debris for the full extents of the pit(s). Care shall be taken to avoid dislodging any firmly bonded aggregate.

2. Ensure that the extents of the pit has a minimum 1/8 inch deep profile in relation to the surrounding floor surface so that the patching compound can be troweled smooth to this lip. The pit may have an adequate lip or one can be created by an appropriate method.

3. Fill pit with SikaTop 122 Plus or SikaTop 123 Plus, or approved equal. Follow manufacturer’s instructions for correct placement procedures. Ensure final patch surface is level and smooth in relation to surrounding concrete surface.

B. At pits with exposed reinforcing:

1. Clean pit(s) free of all loose aggregate, dirt, oil and any and all bond inhibiting debris for the full extents of the pit(s). Care shall be taken to avoid dislodging any firmly bonded aggregate.

2. Remove existing concrete from all around the exposed reinforcing until un-corroded reinforcing is exposed.

3. Clean exposed reinforcing of all bond inhibiting corrosion, dirt and oil by appropriate methods and as directed by the reinforcing bonding agent manufacturer.

4. Coat exposed reinforcing with Sika Armatec 110 Epocem bonding agent, or approved equal, prior to placing patching material.

5. Ensure that the extents of the pit has a minimum 1/8 inch deep profile in relation to the surrounding floor surface so that the patching compound can be troweled smooth to this lip. The pit may have an adequate lip or one can be created by an appropriate method.

6. Fill pit with SikaTop 122 Plus or SikaTop 123 Plus, or approved equal. Follow manufacturer’s instructions for correct placement procedures. Ensure final patch surface is level and smooth in relation to surrounding concrete surface.

3.12 UNIT PRICE QUANTITIES
A. In accordance with Section 01 21 10 Unit Prices and Allowances, the Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.

B. Contractor shall notify Owner in writing when 80% of the quantity is used for each unit price item.

C. Provide photograph or video documentation of repairs.

D. Locate quantities and show their locations on the applicable drawings.

E. Provide actual use quantities on each Application for Payment request.

3.13 MISCELLANEOUS CONCRETE ITEMS

A. Filling in: Fill in holes an opening left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place and cure concrete as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.

3.14 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.

B. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the following methods:

C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
   a. Cure concrete surfaces to receive bonded concrete toppings or ceramic or quarry tile installed with either the thickset or thin-set method with a moisture-retaining cover. Do not use curing compound to cure concrete slabs at these locations.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recount areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.15 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least six months. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

3.16 CONCRETE SURFACE REPAIRS (FOR NEWLY PLACED CONCRETE)

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

3.15 FIELD QUALITY CONTROL

A. Testing Agency: Owner will provide a qualified independent testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement. Sampling and testing for quality control may include those specified in this article.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mix exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.

   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mix, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.

4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.
a. Cast and field cure one set of four standard cylinder specimens for each composite sample.


a. Test one field-cured specimens at 7 days and two at 28 days, and keep one for a spare.

b. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at age indicated.

C. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.

D. When strength of field cured cylinders is less than 85 percent of companion laboratory cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

E. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive strength tests equals or exceeds the specified compressive strength by more than 500 psi.

F. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

G. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect.

3.17 SPECIAL INSPECTIONS

A. Special Inspections as related to IBC 2012 Chapter 17 requirements are required for this project. Owner will engage a testing and inspection agency with experience, qualifications, certifications, and licenses required to perform the special inspections and testing indicated. Reference IBC 2012 Table 1705.3. See drawings and Special Inspections Schedule for specific requirements.

END OF SECTION
SECTION 03 90 03 – CONCRETE RESTORATION FOR TOP DECK

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes non-structural repairs to in place concrete surfaces of the top deck and ramps to/from the top deck. Surfaces include:
   1. Random vertical locations.
   2. Horizontal locations including the following.
      a. Entire top parking deck surface.
      b. Sidewalk/ramps at/to top deck.
      c. Nosings at prefabricated expansion joints
      d. Penthouses, platforms and landings on exterior (note in stairwells).
      e. Areas shown on structural drawings.

B. Also see drawing details for repairs to concrete repairs and Structural drawings for structural modifications at top deck concrete and metal form.

C. Cleaning areas of repaired surfaces and surfaces affected by work is required to be included in this work.

D. Coordinate application of vehicular traffic coating in accordance with Section 07 14 03, Concrete Deck Coating for Vehicular Traffic.

E. A set quantity is required for polymer modified concrete restoration. This quantity is to be included in the Base Bid as listed on the Unit Prices Attachment. Any quantity above or below the set quantity amount shall result in an add or deduct to the Contract Sum based on the unit price provided.

1.2 RELATED REQUIREMENTS

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

B. Section 02 04 03: Cutting and Patching for Building Envelope

C. Section 02 05 03: Demolition and Removal for Building Envelope

D. Section 02 82 03: Engineering Control of Asbestos Containing Material

E. Section 04 50 03: Select Masonry Replacement Restoration and Cleaning

F. Section 06 10 03: Rough Carpentry for Roofing

G. Section 07 14 03: Concrete Deck Coating for Vehicular Traffic

H. Section 07 55 03: Modified Bitumen Sheet Roofing System

I. Section 07 60 03: Sheet Metal for Building Envelope and Fencing

J. Section 07 91 03: Prefabricated Parking Garage Joints

K. Section 07 92 03: Sealants for Building Envelope

L. Section 08 81 03: Fenestration Replacement
1.3 REFERENCES

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

B. AMERICAN CONCRETE INSTITUTION (ACI):
   1. ACI 318 (2005) Building Code Requirements for Structural Concrete and Commentary
   2. ACI 548.3 (2009) Report on Polymer Modified Concrete

C. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO):
   1. AASHTO M 182 (2005) Standard Specification for Burlap Cloth Made from Jute or Kenaf and Cotton Mats

D. ASTM INTERNATIONAL (ASTM):


17. ASTM C 672/C 672M (2003) Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals


E. INTERNATIONAL CODE COUNCIL (ICC):


F. INTERNATIONAL CONCRETE REPAIR INSTITUTE (ICRI):

1. ICRI Technical Guideline Number 120.1-2009 Guidelines and Recommendations for safety in the concrete repair industry

2. ICRI Technical Guideline Number 120.1-2009 Environmental Health and Safety Committee


4. ICRI Technical Guideline Number 310.1R-2008 Guide for surface preparation for the repair of deteriorated concrete resulting from reinforcing steel corrosion

5. ICRI Technical Guideline Number 310.2-1997 selecting and specifying concrete surface preparation for sealers, coatings and polymer overlays

1.4 SUBMITTALS

A. Submit the following in accordance with Division 01, Submittals.

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

C. Product data describing products and methods of mixing and application instructions.

D. Product data stating compliance with specified performance criteria.

E. Provide a minimum of two (2) on site cured samples of 12 inches by 12 inches in plan dimension and 1 ½ inches in thickness in locations selected by the Engineer/Consultant. The samples shall be checked for matches in color, shade, finish and texture.

F. Safety Data Sheets (SDS): Submit Safety Data Sheets with each specification section and include with Safety Plan.
1.5 QUALITY ASSURANCE

A. Concrete Repair Supplier: Regularly engaged in production of Concrete Repair Products.

B. Concrete Repair Product Applicator: Regularly engaged and properly equipped for application of concrete preparation and repair methods and materials, and as acceptable by aggregate producer.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's original undamaged packages or acceptable bulk containers bearing the identification of the product, manufacturer, batch number, and expiration date.

B. Store packaged materials to protect them from elements or physical damage.

C. Do not use cement that shows indications of moisture damage, caking, or other deterioration.

D. Do not use materials, which have exceeded the products shelf life.

E. Handle all products with appropriate precautions and care as stated on the Materials Safety Data Sheet.

1.7 JOB CONDITIONS

A. Do not place materials when ambient temperature is at or below freezing (32 deg F, 0 deg C).

B. When air temperature has fallen or is expected to fall below 40 deg F (4 deg C), heat water to a maximum 120 deg F (48 deg C) before mixing to attain material at point of placement with temperature of 50 deg F (10 deg C) min. and 80 deg F (27 deg C) max.

C. Do not place materials on surfaces covered with standing water, snow, or ice.

D. Do not place concrete repair materials when ambient temperature is at or below 40 degrees F or at or above 90 degrees F.

E. Use appropriate measures for protection and supplementary heating to ensure proper curing conditions in accordance with the manufacturer’s instructions.

PART 2 - PRODUCTS

2.1 NON-SHRINK, POLYMER MODIFIED REPAIR MATERIALS

A. The polymer modified repair mortar shall be a blend of portland cement, well graded, clean, aggregates, polymers, and admixtures to produce a workable mix.

1. Product to be suitable/intended for vehicular traffic.

B. One or two component cement based, polymer modified repair mortar for horizontal, vertical and overhead patching.

C. High bond strength and rapid strength gain.

D. Freeze-thaw resistant.

E. The material shall not contain asbestos, chlorides, nitrates, added gypsum, added lime, or high alumina cements.
2.2 DESIGN MIX

A. General: Design concrete repair material mix to produce the following minimum physical properties.

1. Minimum 12% of cement binder is synthetic organic polymer.

2. Compressive Strength after 24 hours: Minimum 2000 psi, when tested in accordance with ASTM C 109.

3. Compressive Strength after 28 days: Minimum 6250 psi, when tested in accordance with ASTM C 109.

4. Bond Strength: Minimum 1200 psi, when tested in accordance with ASTM C 1042M.

5. Dry Cure Shrinkage: Not greater than .05% when tested in accordance with ASTM C 157.

B. Do not exceed maximum air content recommended by the manufacturer.

C. Use minimum amount of water necessary to produce a workable mix.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. Remove all areas of unsound, weak, damaged, or loose concrete. This is a significant portion of the horizontal parking surface of the top deck.

B. Loose particles, laitance, scaling, pop-outs/honeycombs, spalling, cracked, or debonded/delaminated concrete and foreign materials shall be removed with hand tools unless otherwise noted.

C. Clean newly exposed concrete free of all foreign matter including oil, grease, dust, and any other surface contaminants.

D. Substrate Priming: Substrate should be primed using the manufacturers recommended products, and strictly following the application requirements.

E. Where areas of exposed and/or deteriorating reinforcing steel are occurring, concrete shall be completely removed from around reinforcing not less than one inch.

F. Exposed reinforcing steel shall be mechanically cleaned to bare metal and coated with two coats of a zinc-rich primer paint or rust inhibitor as recommended by the concrete repair material manufacturer.

3.2 REPAIR

A. Patched areas should be allowed to cure sufficiently so that the material can be walked on without leaving footprints or other indentions.

B. Place concrete repair materials in strict accordance with manufacturer's instructions.

1. Deposit concrete repair materials in a continuous operation to a maximum thickness of 2 inches. If multiple lifts are required, allow each lift to set prior to application of additional lifts.

2. Place concrete repair materials to create tapers, fill voids and rebuild damaged and removed areas and to provide a level plane.
3. Concrete repair materials shall have a finished appearance to match the adjacent surface finish, level, texture, and color.

C. Provide temporary protection from premature drying, extremes in temperatures, rapid temperature changes, and inclement weather conditions until completion of curing as recommended by the material manufacturer.

3.3 DEFECTIVE WORK

A. General: Refinish, or remove and replace material surfaces that are too rough to receive finish roofing, or where physical properties do not meet specified requirements, as determined by the Owner’s Representative.

3.4 UNIT PRICED QUANTITIES

A. Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.

B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.

C. Provide photograph or videotape documentation of repairs.

D. Locate quantities and show their locations on the applicable drawings.

E. Provide actual used quantities on each Application for Payment request.

END OF SECTION 03 90 03
SECTION 04 20 00 - UNIT MASONRY

PART ONE - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes unit masonry assemblies consisting of the following:

1. Concrete masonry units (CMUs).
2. Mortar and grout.
3. Reinforcing steel.
4. Masonry joint reinforcement.
5. Brick Veneer

1.3 SUBMITTALS

A. Product Data: For each different masonry unit, accessory, and other manufactured product specified.

B. Samples for Verification: For the following:

1. Full-size units for each different exposed masonry unit required, showing the full range of exposed colors, textures, and dimensions to be expected in the completed construction.

C. Material Test Reports: From a qualified testing agency indicating and interpreting test results of the following for compliance with requirements indicated:

1. Each type of masonry unit required.
2. Mortar complying with property requirements of ASTM C 270.

D. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:

1. Each type of masonry unit required.
2. Each cement product required for mortar and grout, including name of manufacturer, brand, type, and weight slips at time of delivery.
3. Each material and grade indicated for reinforcing bars.
4. Each type and size of joint reinforcement.
5. Each type and size of anchor, tie, and metal accessory.

E. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

F. Submit samples of 8 inch CMU blocks from first pallet of block delivered to the site to the testing agency for pre-construction strength tests to determine f’m. During course of project, submit block samples to testing agency at intervals not exceeding 5000SF of wall surface for strength tests and verification of f’m.
1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1093 to conduct the testing indicated, as documented according to ASTM E 548. Quality Assurance Program shall be that of ACI 530, Level 3.

B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.

C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

1. Protect concrete masonry units from moisture absorption so that, at the time of installation, the moisture content is not more than the maximum allowed at the time of delivery.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.6 PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.

B. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by coverings spread on ground and over wall surface.

2. Protect sills, ledges, and projections from mortar droppings.

3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

D. Hot-Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required.

1. When ambient temperature exceeds 100 deg F, or 90 deg F with a wind velocity greater than 8 mph, do not spread mortar beds more than 48 inches ahead of masonry. Set masonry units within one minute of spreading mortar.

PART TWO - PRODUCTS

2.1 MASONRY UNITS, GENERAL

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.2 CONCRETE MASONRY UNITS (CMUs)

A. General: Provide shapes indicated and as follows:

2. Provide special shapes at special conditions.
3. Provide square-edged units for outside corners.

B. Concrete Masonry Units: ASTM C 90.

1. Unit Compressive Strength: Provide 8 inch units with minimum average net-area compressive strength of 1900 psi.
2. Weight Classification: Lightweight.
3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.

2.3 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
B. Hydrated Lime: ASTM C 207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207, Type S.

D. Mortar Cement: ASTM C 1329. Type S.

E. Aggregate for Mortar: ASTM C 144.
   1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
   2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.

F. Aggregate for Grout: ASTM C 404.

G. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
   1. Products:
      a. Addiment Incorporated; Mortar Kick.
      b. Euclid Chemical Company (The); Accelguard 80.
      d. Sonneborn, Div. of ChemRex; Trimix-NCA.

H. Water: Potable.

2.4 REINFORCING STEEL

A. Uncoated Steel Reinforcing Bars: ASTM A 615, Grade 60.

2.5 MASONRY JOINT REINFORCEMENT

A. General: ASTM A 951 and as follows:
   1. Hot-dip galvanized, carbon-steel wire.
   2. Wire Size for Side Rods: W1.7 or 0.148-inch diameter.
   3. Wire Size for Cross Rods: W1.7 or 0.148-inch diameter.
   4. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units where indicated.

B. For single-wythe masonry, provide ladder type with single pair of side rods and cross rods spaced not more than 16 inches o.c.

C. For multiwythe (including brick veneer) masonry, provide types as follows:
   5. For CMU/brick veneer cavity wall: Adjustable (two-piece) type, ladder design, with one side rod at each face shell of backing wythe and with separate ties that extend into facing wythe. Ties have two hooks that engage eyes or slots in reinforcement and resist movement perpendicular to wall. Ties extend at least halfway through facing wythe but with at least 5/8-inch cover on outside face.

6. For CMU/brick veneer wall with no cavity: vertically adjustable anchors screwed to CMU with wire pintels embedded in veneer and connected to anchor; spaced at 16 inches max vertically and horizontally.

2.6 TIES AND ANCHORS, GENERAL

A. General: Provide ties and anchors, specified in subsequent articles, made from materials that comply with this Article, unless otherwise indicated.

B. Hot-Dip Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.

C. Galvanized Steel Sheet: ASTM A 653/A 653M, G60, commercial-quality, steel sheet zinc coated by hot-dip process on continuous lines before fabrication.

D. Steel Sheet, Galvanized after Fabrication: ASTM A 366/A 366M cold-rolled, carbon-steel sheet hot-dip galvanized after fabrication to comply with ASTM A 153.

E. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.7 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: Solution of 1/2-cup dry measure tetrasodium polyphosphate and 1/2-cup dry measure laundry detergent dissolved in 1 gal. of water.

B. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

1. Manufacturers: Subject to compliance with requirements, provide appropriate products by one of the following:

   a. Diedrich Technologies, Inc.
   b. ProSoCo., Inc.
   c. Aldon Chemical Co.

2.8 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.

2. Do not use calcium chloride in mortar or grout.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in the form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification.
1. For concrete masonry, use Type S. Masonry Cement is not permitted.

D. Grout for Unit Masonry: Comply with ASTM C 476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 5 of ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143.
3. All reinforced cells shall be filled with 3,000 psi grout, at a minimum.
4. All lintels and bond beams shall be filled with 3,000 psi grout.

PART THREE - EXECUTION

3.1 EXAMINATION

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

5. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
6. Verify that reinforcing dowels are properly placed.
7. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Before installation, examine rough-in and built-in construction to verify actual locations of piping connections.

3.2 INSTALLATION, GENERAL

A. Thickness: Build cavity walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this Section and in other Sections of the Specifications.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to the opening.

D. 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.

E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.

8. Mix units from several pallets or cubes as they are placed.

3.3 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.

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: In each course, rack back one-half-unit length for one-half running bond or one-third-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly if required, and remove loose masonry units and mortar before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items.

F. Revise paragraph below if flexible perimeter joint or thermal break is required.

G. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.

H. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.

3.5 MORTAR BEDDING AND JOINTING

A. Lay brick and 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. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than the joint thickness, unless otherwise indicated.

C. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint), unless otherwise indicated.

### 3.6 CAVITY WALLS

A. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.

### 3.7 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 o.c.
2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
3. Provide reinforcement not more than 8 inches above and below wall openings and extending 24 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.

### 3.8 CONTROL AND EXPANSION JOINTS

A. General: Install control joints in unit masonry where indicated, at spacing not to exceed 25 feet. Build-in related items as masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.

B. Form control joints in concrete masonry as follows:

4. Install preformed control-joint gaskets designed to fit standard sash block.

C. Build in horizontal, pressure-relieving joints where indicated; construct joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Division 07 Section "Joint Sealants."

1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry veneer and attached to structure behind masonry veneer.
3.9 LINTELS

A. Install steel lintels and shelf angles where indicated. All lintels and shelf angles (and shelf anchor rods) shall be hot-dipped galvanized.

B. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

3.10 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores to support reinforced masonry elements during construction.

1. Construct formwork to conform to shape, line, and dimensions shown. Make it sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.

2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements of ACI 530.1/ASCE 6/TMS 602.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.

3. Comply with requirements of ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

4. Limit height of vertical grout pours to not more than 60 inches

3.11 FIELD QUALITY CONTROL

A. Special Inspections for Masonry: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense. IBC Chapter 17 Special Inspections are required for this project. ACI 530 Level 3 inspections are required.

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

C. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2 applicable to type of stain on exposed surfaces.

END OF SECTION
SECTION 04 50 03 – SELECT MASONRY REPLACEMENT, RESTORATION AND CLEANING

PART 1 - GENERAL

1.1 SUMMARY

A. Work includes inspection and repair of existing masonry and other wall surfaces/wall areas and substrates where new exterior wall systems are not provided. Work also includes masonry pinning, stitching and repointing of the additional quantities indicated below located in other random areas.

1. Masonry repairs located in small randomly located areas.

2. Repointing in randomly located areas as listed on the Unit Prices Attachment. One SF shall be equal to 7 LF.

3. Removal of 5-7 courses of brick and 2 – 3 courses of block in sections is required to accomplish thru wall flashing and lintel repairs/replacement at areas defined on drawings.

4. Base pinning quantity on a SF quantity (1 fastener per every other row of brick).

5. Base stitching quantity on a LF quantity (the length of the stitching material). The repair extends beyond as shown in detail.

B. The masonry replacement, shelf angle/lintel replacement and options for new wall assemblies are included in the Structural drawings and in the masonry specification section from 4SE.

C. Clean entire exterior wall surfaces prior to commencing.

1. Clean entire exterior building envelope including ramps, walkways, stairs, louvers, roofs, screen walls, etc. upon completion of construction work.

D. A set quantity is required for masonry replacement/repair, restoration and cleaning. This quantity is to be included in the Base Bid as listed on the Unit Prices Attachment. Any quantity above or below the set quantity amount shall result in an add or deduct to the Contract Sum based on the unit price provided.

1.2 RELATED REQUIREMENTS

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

B. Section 02 04 03: Cutting and Patching for Building Envelope

C. Section 02 05 03: Demolition and Removal for Building Envelope

D. Section 02 82 03: Engineering Control of Asbestos Containing Material

E. Section 03 90 03: Concrete Restoration for Top Deck

F. Section 06 10 03: Rough Carpentry for Roofing

G. Section 07 14 03: Concrete Deck Coating for Vehicular Traffic

H. Section 07 55 03: Modified Bitumen Sheet Roofing System

I. Section 07 60 03: Sheet Metal for Building Envelope and Fencing

J. Section 07 91 03: Prefabricated Parking Garage Joints

K. Section 07 92 03: Sealants for Building Envelope

L. Section 08 81 03: Fenestration Replacement
1.3 REFERENCES

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

B. AMERICAN CONCRETE INSTITUTE (ACI):
   1. ACI 530 (2005) Building Code Requirements for Masonry Structures Commentaries

C. ASTM INTERNATIONAL (ASTM):
   7. ASTM C 91 (2005) Masonry Cement

D. BRICK INDUSTRY ASSOCIATION (BIA):

E. COPPER DEVELOPMENT ASSOCIATION (CDA):
   1. CDA 4115 (Latest Edition) Copper in Architecture

F. INTERNATIONAL CODE COUNCIL (ICC):


H. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA):

I. SHEET METAL & AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA):
1.4 DEFINITIONS

A. CLEANED SURFACE: All masonry surface that will be cleaned by a cleaning agent, an acid solution, by sand blasting, pressure steam, pressure water, or cleaning detergent; the method for which will be described in this section.

B. CRAZING: A term describing the minute surface cracking of masonry units.

C. BRICK: Masonry materials intended for cleaning.

D. EFFLORESCENCE: The white powder salt deposit left on the face of masonry units after moisture has evaporated.

E. POINTING: Placing pointing mortar into masonry joints and tooling to achieve a dense smooth finish.

F. SPALLING: The breaking or separation of a masonry unit face, parallel to the face plane; usually caused by pressure applied to the masonry unit edge or by pressure from behind the face caused by freeze/thaw cycling.

G. REPOINTING: Cutting into or mechanically raking existing masonry joints approximately 1/4 to 1/2-inch deep then placing pointing mortar into joints and tooling to achieve a dense smooth finish.

H. WEEP HOLES: Openings in vertical mortar joints at intervals along the bottom course of masonry, just above the structural supporting device or ledge, to permit moisture in the masonry cavity to migrate to the exterior.

1.5 SUBMITTALS

A. Submit the following in accordance with Division 01, Submittals.

   1. Provide summary and documentation of actual used unit price quantities with Close-Out Documents.

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

C. Shop Drawings: Indicate specific means and methods to require work per Contract.

D. Product Data: Provide data on cleaning compounds, cleaning solutions, and other related products.

E. Samples: Submit four samples of each masonry unit, units to illustrate color, texture and extremes of color range to match existing.

F. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, or methods.

G. Safety Data Sheets (SDS): Submit Safety Data Sheets with each specification section and include with Safety Plan.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 530 and ACI 530.1.

B. Adhere to BIA Technical Notes for masonry repairs and replacement.
C. Maintain one copy of each document on site.
   1. Construction Documents
   2. ACI Standards
   3. BIA Technical Notes

D. Restorer: Company specializing in masonry restoration with minimum three years documented experience specific to this project.

1.7 MOCKUP

A. Provide mockup area of restored or new masonry.

B. Restore and re-point or build new masonry wall sized 8 feet long by 6 feet high, which includes mortar and accessories, typical wall openings and flashings.

C. Clean a 10x10 panel of wall to determine extent of cleaning.

D. Repeat using modified cleaning methods up to three different panels, until acceptable.

E. Locate where directed.

F. Acceptable panel and method of procedure will become the standard for work of this section.

1.8 PRE-INSTALLATION CONFERENCE

A. Convene one week prior to commencing work, but after all submittals have been received of this section, under provisions of the contract.

B. Require attendance of parties directly affecting work of this section.

C. Review conditions of installation, installation procedures, and coordination with related work.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect, and handle products to site in strict compliance with contract requirements.

B. Deliver masonry neatly stacked and tied on pallets. Store clear of ground with adequate waterproof covering.

C. Store all other components, such as acid solution and restoration cleaner materials in manufacturer's packaging.

1.10 PROTECTION

A. Protect elements surrounding the work of this section from damage or disfiguration.

B. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.

C. Protect roof membrane, flashings and other surrounding areas from damage.
1.11 ENVIRONMENTAL REQUIREMENTS


B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.


D. Do not sandblast or use process creating dust, dirt, or mist/spray when wind is over 10 mph.

1.12 COORDINATION / SEQUENCING

A. Coordinate work of this section with interfacing and adjacent work for proper sequencing. Ensure weather resistance at all times during construction and durability of work and protection of materials and finishes.

B. Sequence work as outlined on the drawings.

C. Perform repointing after cleaning masonry surfaces.

1.13 SCHEDULING

A. Schedule work under the provisions of Division 01, Submittals.

B. Perform cleaning and washing to exterior masonry on weekends or after 5 PM and before 7 AM.

PART 2 - PRODUCTS

2.1 MASONRY

A. Contractor to salvage and reuse the largest amount of brick possible and all new brick shall be approved ‘in field’ as acceptable match for owner.

B. All new masonry materials shall match existing in type, style, texture and color. Mock up sample repair to be approved by the Owner.

C. New wall sections and large masonry wall replacement drawings and masonry section from 4SE.

2.2 CLEANING MATERIALS

A. Cleaning Agent: Detergent, Solvent cleaner or Acid solution.

B. Contractor to submit specific products and methods, with supporting data to substantiate its use.

2.3 MORTAR MATERIALS

A. Mortar for re-pointing and repairs
   1. Newer brick work – Type "N".

B. Match existing mortar color, existing conditions or as selected by the Owner.

C. Mortar strength and density shall be comparable to existing mortar.

D. A pre-hydrated mortar is required.
2.4 ANCHORS AND WALL TIES

A. If any are required, provide anchors and ties for cavity walls with integral drip located in the cavity and two piece assembly, mechanically secured to wall, similar to Dur-O-Wal Dove Tail Triangle or secure or anchor.

2.5 THRU-WALL FLASHING

A. Use 24 gage stainless steel sheet for all sheet metal thru-wall flashings.

B. Copper/Fiberglass Laminated Flashing.
   1. Description:
      a. Asphalt free copper fabric flashing 7 ounce minimum weight.
   2. Material:
      a. Copper sheet with 060 temper conforming to ASTM B 370 bonded with a proprietary rubber based adhesive, between two layers of fiberglass fabric weighing not less than 0.3 oz per sq. ft. per layer with a minimum of 20x20 threads per inch.

2.6 ACCESSORIES

A. Bituminous Coating:
   1. SSPC-Paint 12, Cold-Applied Asphalt Mastic (Extra Thick Film), nominally free of sulfur, compounded for 15-mil dry film thickness per coat.

B. Joint Sealant:
   1. One-part, copper compatible elastomeric polyurethane, polysulfide, butyl or silicone rubber sealant as tested by sealant manufacturer for copper substrates.

C. Adhesives:
   1. Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of and compatibility with flashing sheet.

D. High Temperature Grade Water Barrier Underlayment:
   1. Cold applied, self-adhering membrane composed of a high density, cross laminated polyethylene film coated on one side with a layer of butyl rubber or high temperature asphalt adhesive. Provide primer when recommended by water barrier manufacturer.
   2. Minimum Thickness:
      a. 40 mil.
   3. Tensile Strength:
      a. ASTM D 412 (Die C Modified); 250 psi.
   4. Membrane Elongation:
      a. ASTM D 412 (Die C Modified); 250%
5. Permeance (Max):
   a. ASTM E96; 0.05 Perms.

6. Acceptable Products:
   c. CCW MiraDRI WIP 300 High Temperature, Carlisle Coatings and Waterproofing.

E. Weep Vents
   1. Prefabricated metal or plastic sized to form the proper size opening in head joints. Provide aluminum and plastic inserts with grill or screen-type openings designed to allow the passage of moisture from cavities and to prevent the entrance of insects.

F. Metal Accessories:
   1. Provide cleats, straps, anchoring devices, and similar accessory units as required for installation of work, noncorrosive, size and gauge required for performance.

G. Rivets:
   1. Pop Rivets:
      a. 1/8-inch (3-mm) to 3/16-inch (4.5-mm) diameter, with solid brass mandrels.
      2. Provide solid copper rivet (tinner’s rivets) where structural integrity of seam is required.

2.7 PERFORMANCE REQUIREMENTS

A. Installation Requirements: Fabricator is responsible for installing system, including anchorage to substrate and necessary modifications to meet specified and drawn requirements and maintain visual design concepts in accordance with Contract Documents and following installation methods as stipulated in the "Copper in Architecture" handbook published by the Copper Development Association Inc. (CDA).

1. Drawings are diagrammatic and are intended to establish basic dimension of units, sight lines, and profiles of units.
2. Make modifications only to meet field conditions and to ensure fitting of system components.
3. Obtain Consultant/Engineer’s approval of modifications.
4. Provide concealed fastening wherever possible.
5. Provide masonry repointing, pinning and stitching based on the quantities included in the Base Bid. Locations will be field verified with Consultant/Engineer after cleaning.
6. Upon approval of submittals, also adhere to the manufacturer’s specific requirements for pinning and stitching.
7. Attachment considerations: Account for site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening and fracturing connection between units and building structure or between components themselves.
8. Attachment considerations: Account for site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening and fracturing connection between units and building structure or between components themselves.

9. Obtain Consultant/Engineer’s approval for connections to building elements at locations other than indicated in Drawings.

10. Accommodate building structure deflections in system connections to structure.

B. System shall accommodate movement of components without buckling, failure of joint seals, undue stress on fasteners, or other detrimental effects when subjected to seasonal temperature changes and live loads.

C. Provide thru-wall flashing systems that are watertight and adhere to the building code requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces to be cleaned, and/or restored are ready for work of this section.

3.2 PREPARATION

A. Carefully remove and store fixtures, fittings, finishing hardware, and accessories on the exterior walls.

B. Close off, seal, mask, and board up areas, landscaping, materials, and surfaces not receiving work of this section to protect from damage.

C. Construct dust proof and weatherproof partitions to close off occupied areas.

3.3 GENERAL INSTALLATION

A. Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with the "Copper in Architecture" handbook published by the Copper Development Association Inc. (CDA). Anchor units of work securely in place by methods indicated, providing for thermal expansion of units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.

1. Install units plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction.

2. Apply asphalt mastic on copper surfaces of units in contact with dissimilar metals.

3. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

4. Miter, lap seam and close corner joints at all conditions. Seal seams and joints watertight with sealants/adhesions/mastics in all laps.

5. Install expansion joints at frequency recommended by CDA. Do not fasten moving seams such that movement is restricted.

6. All terminations shall have side and end dams of the flashing material.

B. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.

C. Install reglets to receive counterflashing in manner and by methods indicated in concrete and masonry.
D. Counterflushing and Reglets:

1. Fabricate counterflushings and reglets as 2 piece assemblies to permit installation of counterflushing after base flushings are in place.

2. Fabricate reglets of same metal and thickness as counterflushings.

3. Overlap all flashing 4” minimum and sealant/mastic within lap.

E. Install laminated flashing in accordance with contract and adhere to the manufacturer's recommendations. Where required, provide for movement at joints by forming loops or bellows in width of flashing. Locate cover or filler strips at joints to facilitate complete drainage of water from flashing. Seam adjacent flashing sheets with adhesive, seal and anchor edges in accordance with manufacturer's recommendations.

F. Seal around all fasteners, existing or new, that extend thru the flashing materials.

3.4 REBUILDING (PER QUANTITIES AND UNIT PRICES)

A. Repair per detail or cut out damaged and deteriorated brick masonry with care in a manner to prevent damage to any adjacent remaining materials.

B. Repair all broken bricks per detail or cut out, as well as bedding mortars. Remove headers to full depth in backup masonry. No half-bricks shall be substituted for headers.

C. Needle, shore and support structure as necessary in advance of cutting out units.

D. Cut away loose or unsound adjoining masonry and mortar to provide firm and solid bearing for new work.

E. Build in reclaimed and masonry units following standard procedures and industry practices.

F. Mortar Mix: Colored and proportioned to match existing work.

G. Ensure that anchors ties, reinforcing and flushings are correctly located and built in.

H. Install built in masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.

3.5 REPOINTING (PER QUANTITIES AND UNIT PRICES)

A. Cut out loose or disintegrated mortar in joints to minimum 1/2-inch depth or until sound mortar is reached.

B. Utilize hand tools or power tools only after test cuts determine no damage to masonry units will result.

C. Do not damage masonry units.

D. When cutting is complete, remove dust and loose material by brushing with water jet.

E. Pre-moisten joint and apply mortar specified. Pack tightly in maximum 1/4-inch layers. Form a smooth, compact joint to match existing.

F. Moist cure for 72 hours.
3.6 THRU-WALL FLASHING (PER QUANTITIES AND UNIT PRICES)

A. Provide as indicated on drawings. Unless indicated otherwise, extend flashing from a point 1/4 inch outside of exterior face of walls, upward across wall cavity, not less than 6 inches and onto backing wythe. Bend down exterior edge to form a 1/4-inch drip. Secure flashing as indicated and seal. Provide flashing in lengths as long as practicable. Lap ends not less than 1 1/2-inches for interlocking type and 4 inches for other types. Seal laps as necessary to ensure watertight construction. Provide dams at ends of flashing where masonry abuts concrete and where flashing ends within the masonry.

B. Where thru-wall flashing is to act as a receiver of counterflashing, fabricate and install in accordance with details as shown and NRCA/SMACNA guidelines.

C. Weeps shall be full open head joints a maximum 24 inches on center for masonry faced walls unless otherwise indicated. Wherever through-wall flashing occurs, provide weep vents to drain to flashing exterior.

D. Provide insulation in type and thickness to match existing wall cavity and condition.

E. Remove mortar, pea gravel and debris to install thru-wall flashing. Provide a cavity protection material to ensure clear drainage path.

3.7 LINTEL/SHELF ANGLE MAINTENANCE

A. Cut and clean away loose mortar, sealant and paint from the exposed lintels and shelf angles.

B. Prepare surfaces to receive rust inhibitor primer. Provide primer.

C. Provide an alkyd or urethane-based, two-coat paint system (for exterior exposed steel).

D. Provide minor repointing and repair.

E. Replace sealant joints removed.

3.8 LINTEL/SHELF ANGLE REPLACEMENT (PER QUANTITIES AND UNIT PRICES)

A. Cut out mortar at ends with care in a manner to prevent damage to any adjacent remaining materials or materials to be re-used.

B. Cut away loose or unsound adjoining masonry and mortar to provide firm and solid condition.

C. Remove existing deteriorated lintel/shelf angle and install new to match existing in size and configuration.

D. Clean, prepare, prime and provide two coats to exposed portions of lintels.

E. Reinstall mortar joints and sealants.

F. Build in reclaimed and masonry units following standard procedures and industry practices.

G. Mortar Mix: Colored and proportioned to match existing work.

3.9 LINTEL/SHELF ANGLE REPAIR

A. Cut out masonry with care in a manner to prevent damage to any adjacent remaining materials or materials to be re-used.

B. Needle, shore and support structure as necessary in advance of cutting out units.
C. Cut away loose or unsound adjoining masonry and mortar to provide firm and solid bearing for new work.

D. Provide as indicated. Unless indicated otherwise, extend flashing from a point 1/4 inch outside of exterior face of walls, upward across wall cavity, not less than 6 inches and onto backing wythe. Bend down exterior edge to form a 1/4- inch drip. Secure flashing as indicated and seal. Provide flashing in lengths as long as practicable. Lap ends not less than 1-1/2 inches for interlocking type and 4 inches for other types. Seal side and end-laps to ensure watertight construction. Provide dams at ends of flashing where masonry abuts concrete and where flashing ends within the masonry.

E. Build in reclaimed and masonry units following standard procedures and industry practices.

F. Mortar Mix: Colored and proportioned to match existing work.

G. Ensure that anchors, ties, reinforcing and flashings are correctly located and built in.

H. Install built in masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.

3.10 FORMS AND SHORING OF MASONRY

A. Remove sections of masonry and support and shore as necessary to install new through-wall flashing in designated locations and based on quantities. Prevent deflections, which may result in cracking or other damage to supported masonry. Do not remove until members have cured/set.

3.11 CLEANING EXISTING ALL EXTERIOR WALL SURFACES (ALL AREAS)

A. Pressure Steam Cleaning: Apply pressure to masonry surfaces at locations, maintaining uniform depth and surface texture throughout.

B. Cleaning Detergent: Brush, Spray or Hand wash clean masonry surfaces at locations with detergent in accordance with the manufacturer's instructions. Saturate masonry with clean water and flush loose mortar and dirt.

C. Also remove all excessive mortar at cornice, ledges or recesses.

3.12 CLEANING NEW MASONRY

A. Verify mortar is fully set and cured.

B. Clean surfaces and remove large particles with wood scrapers, brass or nylon wire brushes.

C. Scrub walls with detergent solution using stiff brush. Thoroughly rinse and wash off cleaning solution, dirt and mortar crumbs using clean, pressurized water.

D. Protect area below cleaning operation and keep masonry soaked with water and flushed free of acid and dissolved mortar continuously for duration of cleaning.

E. Before solution dries, rinse and remove solution and dissolved mortar, using clean, pressurized water.

3.13 CONTROL EXPANSION JOINTS

A. Contractor to provide control/expansion joints at locations shown on elevations. Lines to be true and straight and continuous the full height of the wall.
3.14 Restoration Cleaning
A. Clean surfaces and remove large particles with wood scrapers or non-ferrous wire brush.
B. Spray Brush coat masonry with restoration cleaner, mixed into solution in accordance with manufacturer's instructions.
C. Provide a second application if required by preliminary test of sample area.
D. Allow sufficient time for solution to remain on masonry and agitate with soft fiber brush or sponge.
E. Rinse from the bottom up with potable water applied at 400 psi and at a rate of 4 gal/min.

3.15 Aging
A. Rub in or dust new masonry work to match, as close as possible, adjacent original work.
B. Use carbon black in small amounts, rubbing in well with burlap rags or medium bristle brush.
C. After each application, dust off surplus and wash down with low-pressure hose. Allow surface to dry before proceeding with succeeding applications.
D. Continue process until acceptance.

3.16 Unit Priced Quantities
A. Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.
B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.
C. Provide photograph or videotape documentation of repairs.
D. Locate quantities and show their locations on the applicable drawings.
E. Provide actual used quantities on each Application for Payment request.

End of Section 04 50 03
SECTION 05 12 00 - STRUCTURAL STEEL

PART ONE - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes structural steel.

B. Related Sections: The following Sections contain requirements that relate to this Section:

   1. Division 3 Section “Cast-in-place Concrete” for installation of embedded items.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Engineer structural steel connections required by the Contract Documents to be selected or completed by the fabricator to withstand loadings from capacities of bolts indicated.

B. Details shown are typical: Similar details apply to similar conditions, unless otherwise indicated. Promptly notify Architect whenever design of members or connections for any portions of the structure is not clearly indicated. Structural design of connections not detailed or designed on the drawings to be under direct supervision of a professional engineer licensed in South Carolina.

1.4 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data for each type of product specified.

C. Shop Drawings detailing fabrication of structural steel components.

   1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.

   2. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.

   3. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify high strength bolted slip-critical, direct-tension, or tensioned shear/bearing connections.

D. Manufacturer’s Certificate of Compliance for high strength bolts, nuts, and washers.

E. Manufacturer’s Certificate of Compliance for weld filler material.

F. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed structural steel work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Fabricator Qualifications: Engage a firm experienced in fabricating structural steel similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to fabricate structural steel without delaying the Work. Fabricator must be AISC certified.

C. Comply with applicable provisions of the following specifications and documents:

1. AISC’s “Code of Standard Practice for Steel Buildings and Bridges”.


4. ASTM A 6 (ASTM A 6M) "Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use."


D. Professional Engineer Qualifications: A professional engineer who is legally authorized to practice in the jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for projects with structural steel framing that are similar to that indicated for this Project in material, design, and extent.

E. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code--Steel."

1. Present evidence that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver structural steel to Project site in such quantities and at such times to ensure continuity of installation.

B. Store materials to permit easy access for inspection and identification. Keep steel members off ground by using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration.

1. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.

2. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.
1.7 COORDINATION

A. Supply anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, templates, instructions, and directions, as required, for installation.

PART TWO - PRODUCTS

2.1 STRUCTURAL STEEL MATERIALS

A. Wide Flange Shapes: ASTM A572/A572M, Grade 50 or ASTM A992/A992M, Grade 50.
B. Channels, Angles, M and S Shapes: ASTM A36/A36M.
C. Other Structural Steel Plates and Bars: ASTM A36/A36M.
D. Cold Formed Hollow Structural Sections: ASTM A500, Grade B.
E. Steel Pipe: ASTM A53/A53M, Type E or S, Grade B.
   1. Weight Class: Standard.
   2. Finish: Black.
F. Welding Electrodes: Comply with AWS Requirements.

2.2 BOLTS AND CONNECTIONS

A. High Strength Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M), Type 1, heavy hex steel structural bolts, heavy carbon-steel nuts, and hardened carbon-steel washers.
   1. Finish: Plain, uncoated, typically.
B. Shear Connectors: ASTM A108, Grades 1015 through 1020, headed-stud typed, cold-finished carbon steel, AWS D1.1, Type B.
C. Un-headed Anchor Rods or Bolts: ASTM A36.
   1. Configuration: Straight
   5. Finish: Plain.
D. Adhesive Anchors: Injectable adhesives shall be used for installation of reinforcing steel dowels or threaded anchor rods and inserts into new or existing concrete or masonry where indicated. Adhesive shall be furnished in side by side refill packs which keep component A and component
B separate. Side B side packs shall be designed to compress during use to minimize waste volume. Side by side packs shall also be designed to accept static mixing nozzle which thoroughly blends component A and component B and allows injection directly into drilled hole. Alternately, product may be furnished in large rigid cartridges for high volume work. Only injection tools and static mixing nozzles as recommended by manufacturer shall be used. Manufacturer’s instructions shall be followed. Injection adhesive shall be formulated to include resin, hardener, cement and water to provide optimal curing speed as well as high strength and stiffness. Maximum recommended curing time at 68°F shall be 45 minutes. Anchors installed in concrete shall meet the requirements of ACI 318-05, Appendix D, and shall be approved for use in cracked concrete under seismic loading conditions.

1. Anchor Rods – shall be furnished with chamfered ends so that either end will accept a nut and washer. Alternatively, anchor rods shall be furnished with a 45 degree chisel point on one end to allow for easy insertion into the adhesive-filled hole. Anchor rods shall be manufactured to meet the following requirement: ASTM A36 (standard carbon steel anchor).

2. Nut and Washer – shall be furnished to meet the requirements of the above anchor rod specifications.

E. Expansion Anchors: shall be stud type with a single piece three section wedge and zinc plated in accordance with ASTM B633. The anchors must meet the description in Federal Specifications FF-S-325, Group II, Type 4, Class I for concrete expansion anchors. Anchors shall be installed per manufacturer’s recommendations. Anchors installed in concrete shall meet the requirements of ACI 318-05, Appendix D, and shall be approved for use in cracked concrete under seismic loading conditions.

2.3 PRIMER

A. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds and repair painting galvanized steel, with dry film containing not less than 93 percent zinc dust by weight, and complying with DOD-P-21035A or SSPC-Paint 20.

2.4 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, complying with ASTM C 1107, of consistency suitable for application, and a 30-minute working time.

2.5 FABRICATION

A. Fabricate and assemble structural steel in shop to greatest extent possible. Fabricate structural steel according to AISC specifications referenced in this Section and in Shop Drawings.

1. Camber structural steel members where indicated or where required.

2. Identify high-strength structural steel according to ASTM A 6 (ASTM A 6M) and maintain markings until steel has been erected.

3. Mark and match-mark materials for field assembly.

4. Fabricate for delivery a sequence that will expedite erection and minimize field handling of structural steel.
5. Complete structural steel assemblies, including welding of units, before starting shop-priming operations.


B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
   1. Plane thermally cut edges to be welded.

C. Finishing: Accurately mill ends of columns and other members transmitting loads in bearing.

D. Holes: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members, as shown on Shop Drawings.
   1. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame-cut holes or enlarge holes by burning. Drill holes in bearing plates.
   2. Weld threaded nuts to framing and other specialty items as indicated to receive other work.

E. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed stud shear connectors according to AWS D1.1 and manufacturer’s printed instructions.

2.6 SHOP CONNECTIONS

A. Shop install and tighten high-strength bolts according to RCSC’s "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

B. Weld Connections: Comply with AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.
   1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without warp.

2.8 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to exterior and exposed structural steel (unless indicated otherwise) and to structural steel indicated for galvanizing in accordance with ASTM A123.

PART THREE - EXECUTION

3.1 EXAMINATION

A. Before erection proceeds, and with the steel erector present, verify elevations of concrete and masonry bearing surfaces and locations of anchorages for compliance with requirements.

B. Do not proceed with erection until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity.
to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC specifications referenced in this Section.

B. Base and Bearing Plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen surfaces prior to setting base and bearing plates. Clean bottom surface of base and bearing plates.

1. Set base and bearing plates for structural members on wedges, shims, or setting nuts as required.

2. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate prior to packing with grout.

3. Pack grout solidly between bearing surfaces and plates so no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure.
   a. Comply with manufacturer's instructions for proprietary grout materials.

C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

1. Maintain erection tolerances of architecturally exposed structural steel within AISC’s "Code of Standard Practice for Steel Buildings and Bridges."

D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.

2. Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection.

G. Do not enlarge unfair holes in members by burning or by using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

A. Install and tighten high-strength bolts according to RCSC's "Specification for Structural Joints using ASTM A 325 or A 490 Bolts."

1. Bolts: ASTM A325 (ASTM A325M) high strength bolts, unless otherwise indicated.
2. Connection Types: Snug tightened, typically. Slip Critical (SC), where indicated.

B. Weld Connections: Comply with AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.

1. Comply with AISC specifications referenced in this Section for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.

2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without warp.

3. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent surface bleeding of back-side welding on exposed steel surfaces. Grind smooth exposed fillet welds 1/2 inch (13 mm) and larger. Grind flush butt welds. Dress exposed welds.

3.5 CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and apply galvanizing repair paint according to ASTM A 780.

3.6 UNIT PRICE QUANTITIES

A. In accordance with Section 01 21 10 Unit Prices and Allowances, the Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.

B. Contractor shall notify Owner in writing when 80% of the quantity is used for each unit price item.

C. Provide photograph or video documentation of repairs.

D. Locate quantities and show their locations on the applicable drawings.

E. Provide actual use quantities on each Application for Payment request.

3.7 FIELD QUALITY CONTROL

A. Correct deficiencies in or remove and replace structural steel that inspections and test reports indicate do not comply with specified requirements.

B. Additional testing, at Contractor's expense, will be performed to determine compliance of corrected Work with specified requirements.

C. In addition to visual inspection, field-welded connections will be inspected and tested according to AWS D1.1 and the inspection procedures listed below, at testing agency's option.

   1. Liquid Penetrant Inspection: ASTM E 165.

   2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.

   3. Radiographic Inspection: ASTM E 94 and ASTM E 142; minimum quality level "2-2T."

3.7 SPECIAL INSPECTIONS

A. Special Inspections as related to IBC 2012 Chapter 17 requirements are required for this project. Owner will engage a testing and inspection agency with experience, qualifications, certifications, and licenses required to perform the special inspections and testing indicated. Reference IBC 2012 and AISC 360. See drawings and Special Inspection Schedule for specific requirements.

END OF SECTION
SECTION 06 10 03 - ROUGH CARPENTRY FOR ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes all new carpentry specific to the roof replacement areas A, B and C, which is required at all perimeter locations, terminations and penetrations to complete the work unless specifically noted otherwise.

1. This includes added nailers for tapered insulation.

B. All treated / waterproof carpentry shall have underlayment to provide separation with sheet metal.

C. A set quantity is required for rough carpentry. This quantity is to be included in the Base Bid as listed on the Unit Prices Attachment. Any quantity above or below the set quantity amount shall result in an add or deduct to the Contract Sum based on the unit price provided.

1. Unless specifically noted otherwise, contractor may assume existing nailers/carpentry can be reused. Any carpentry found to be damaged or deteriorated, shall be replaced based on the quantities listed on the Unit Prices Attachment.

1.2 RELATED REQUIREMENTS

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

B. Section 02 04 03: Cutting and Patching for Building Envelope

C. Section 02 05 03: Demolition and Removal for Building Envelope

D. Section 02 82 03: Engineering Control of Asbestos Containing Material

E. Section 03 90 03: Concrete Restoration for Top Deck

F. Section 04 50 03: Select Masonry Replacement Restoration and Cleaning

G. Section 07 14 03: Concrete Deck Coating for Vehicular Traffic

H. Section 07 55 03: Modified Bitumen Sheet Roofing System

I. Section 07 60 03: Sheet Metal for Building Envelope and Fencing

J. Section 07 91 03: Prefabricated Parking Garage Joints

K. Section 07 92 03: Sealants for Building Envelope

L. Section 08 81 03: Fenestration Replacement

1.3 REFERENCES

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

B. AMERICAN FOREST & PAPER ASSOCIATION (AF&PA):

C. AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE):

D. AMERICAN WOOD PRESERVERS BUREAU (AWPB):
   1. AWPB LP22-80 - Standard for Softwood Lumber, Timber, and Plywood Pressure Treated with Waterborne Preservatives for Ground Contact Use

E. AMERICAN WOOD-PRESERVERS’ ASSOCIATION (AWPA):
   2. AWPA M6 (2007) Brands Used on Forest Products

F. APA – THE ENGINEERED WOOD ASSOCIATION (APA):

G. ASTM INTERNATIONAL (ASTM):

H. FACTORY MUTUAL ENGINEERING AND RESEARCH (FM):
   1. FM DS 1-49 (2000) Perimeter Flashing

I. INTERNATIONAL CODE COUNCIL (ICC):

J. SOUTHERN PINE INSPECTION BUREAU (SPIB):

K. U.S. DEPARTMENT OF COMMERCE (DOC):
   1. DOC/NIST PS1 (1995) Construction and Industrial Plywood with Typical APA Trademarks

1.4 SUBMITTALS

A. Submit the following in accordance with Division 01, Submittals.

B. No work will begin until all submittals have been received and approved and Pre-Construction Conference has been completed.
C. A letter from the contractor may be provided that states the grade, size, fasteners and pressure treatment to be used.

1. Certificate of Pressure Treatment

2. Certificate of Grade

   a. Drawing Requirements for rough carpentry indicate materials, details of constructions, methods of fastening, and erection details. Submit drawings for all proposed modifications of structural members. Do not proceed with modifications until the submittal has been approved.

3. Certificate or letter defining fastener types for applications to CA, ACQ or MCQ wood treatment.

D. Layout Plan for Carpentry

E. Safety Data Sheets (SDS): Submit Safety Data Sheets with each specification section and include with Safety Plan.

1.5 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver materials to site in an undamaged condition.

B. Storage: Carefully store materials in enclosed trailer providing proper ventilation, drainage, and protection against dampness.

C. Handling: Remove defective and damaged materials and provide new materials.

D. Ensure grade marks are present on all lumber.

1.6 MOISTURE CONTENT

A. General:

   1. Air or kiln treated lumber after treatment.

B. Moisture Content:

   1. Maximum moisture content of wood products shall be as follows at the time of delivery to the job site and stored properly to eliminate any further exposure.

      a. All lumber and boards - 19% maximum.

      b. Materials other than lumber or moisture content shall be in accordance with referenced standard.

1.7 PRESERVATIVE TREATMENT

A. All lumber and timber shall be treated in accordance with AWPA U1 or approved equal. Treatment shall be a minimum .25 for above grade use. This includes nailers, edge strips, crickets, curbs, blocking, and cants for new roofing system.

B. Equivalent treatment methods / products, such as Alkaline Copper Quaternary (ACQ), Micronized Copper Quaternary (MCQ) or Copper Azole (CA) will be considered under the substitution process. Substitution request must address the proposed fasteners / types that will be used.
C. Any wood, nailers or other rough carpentry using Copper Azole (CA), Alkaline Copper Quaternary (ACQ) or Micronized Copper Quaternary (MCQ) treatment will require verification of the following:

1. Separation of aluminum/galvalume sheet metal from the rough carpentry.
2. Type of fasteners acceptable for attachment into these woods (such as stainless steel).
   a. Fasteners for wood to wood connectors.
   b. Fasteners thru metal into wood.

D. All wood shall be air or kiln dried after treatment.

E. Plywood Sheathing, AWPA, U1.

PART 2 - PRODUCTS

2.1 LUMBER

A. Framing Lumber: Nailers, framing edge strips, crickets, curbs and cants.

B. Grade of Lumber shall be No. 2 or better.

2.2 PLYWOOD

A. Plywood to repair existing plywood or used in combination with nailers shall match in thickness and shall be exterior grade and pressure treated material.

B. Plywood used with nailers shall be sandwiched between nailers.

C. Plywood for overlayment shall be a minimum 5/8 inch exterior grade and pressure treated.

D. Plywood shall conform to DOC PS 1, APA PRP-108 or APA PS 2, Grade C-D or sheathing grade with exterior glue. Sheathing for roof and walls without corner bracing of framing shall have a span rating of 16/0 or greater for supports 16 inches on center and a span rating of 24/0 or greater for supports 24 inches on center.

2.3 FASTENERS

A. Fasteners shall be compatible with the materials being fastened and shall provide for secure, firm attachment.

B. Exposed fasteners shall have domed head with integral metal washer and rubber gasket.

C. Fasteners shall be hot dipped galvanized steel, stainless steel, bronze or copper as a minimum. Wood treatment may require specific type of fasteners.

D. Do not use impact-driven fasteners. Use pre-drilled, screw-type fasteners.

E. Only stainless steel fasteners shall be used to connect dissimilar metals.
2.4 ROUGH HARDWARE

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

PART 3 - EXECUTION

3.1 INSTALLATION

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

B. Fit framing lumber accurately to the required lines and levels to match existing nailers, which shall be removed.

C. Set nailers with their crown edge up.

3.2 WOOD ROOF NAILERS, EDGE STRIPS, CURBS AND CANTS

A. General:

1. Provide sizes and configurations to match existing conditions at edge perimeters, curbs, and expansion joints.

2. Thicknesses to match insulation thicknesses and minimum 2 x 6, unless specifically noted otherwise.

3. If multiple layers, attach each layer independently and minimum 1 1/2 inch thickness at top, when applicable.

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

C. Wood Blocking Attachment

1. Concrete Substrate

   a. A minimum 1/2 inch diameter anchor bolt with a minimum 2 3/4 inch embedment and a minimum 1 inch diameter washer flush with concrete substrate and recessed into wood blocking.

   b. Anchors should be staggered if blocking is wider than 6 inches.

   c. Anchors should be not more than 48 inches on center and no less than three (3) anchors per 8 feet section of carpentry. At corners reduced to 24 inches on center.

2. Steel Substrate

   a. A minimum 3/4 inch diameter bolt tapped into a structural member or into bar joists between 48 inches on center.

   b. Attachment to metal deck requires #12 fastener 12 inches on center and 6 inches on center at corners.
c. Provide separation of surfaces by means of waterproof underlayment.
d. The corner shall be defined as a minimum of 10 feet and increased based on ASCE 7 guidelines.
e. This may require attachment to structural framing.

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

D. Nailers/Fasteners

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

E. Nailer Configurations

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

3.3 BASE FLASHING SECUREMENT

A. Where a nailable substrate does not exist for the securement of the base flashing, provide a 24 gage, galvalume sheet metal securement strip to the wall at all base flashing locations.

3.4 UNIT PRICED QUANTITIES

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

END OF SECTION 06 10 03
SECTION 07 14 03 – CONCRETE DECK COATING FOR VEHICULAR TRAFFIC

PART 1 - GENERAL

1.1 SUMMARY

A. Work includes fluid applied coating system over the top deck including all horizontal surfaces, curbs, concrete walls and ramps to/from top deck concrete surfaces in the locations specifically identified on the drawings.

1. Concrete condition on top surface is in poor condition and will require substantial repairs.

B. This section includes the application of a fluid applied waterproofing system to include a base coat, fabric reinforcing (to specific and minor locations), and top coat.

1. Minimum dryfilm thickness (DFT) of base coat shall be 16 mils and top coat shall be 16 mils. Total minimum DFT of 32 mils.

C. Testing and certification of compatibility of the existing materials/substrates and the new coating system is required.

1. Manufacturer’s review of repaired concrete surfaces prior to coating for warranty approval.

D. Crack repair procedures for the existing substrates are shown in the drawings.

E. Concrete repairs in accordance with 03 90 03, Concrete Restoration for Top Deck, shall be included to provide suitable substrate.

F. Restriping and repainting surfaces to match existing is required.

G. A set quantity is required for coating. This quantity is to be included in the Base Bid as listed on the Unit Prices Attachment. Any quantity above or below the set quantity amount shall result in an add or deduct to the Contract Sum based on the unit price provided.

1.2 RELATED REQUIREMENTS

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

B. Section 02 04 03: Cutting and Patching for Building Envelope

C. Section 02 05 03: Demolition and Removal for Building Envelope

D. Section 02 82 03: Engineering Control of Asbestos Containing Material

E. Section 03 90 03: Concrete Restoration for Top Deck

F. Section 04 50 03: Select Masonry Replacement Restoration and Cleaning

G. Section 06 10 03: Rough Carpentry for Roofing

H. Section 07 55 03: Modified Bitumen Sheet Roofing System

I. Section 07 60 03: Sheet Metal for Building Envelope and Fencing

J. Section 07 91 03: Prefabricated Parking Garage Joints

K. Section 07 92 03: Sealants for Building Envelope

L. Section 08 81 03: Fenestration Replacement
1.3 REFERENCES

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

B. ASTM INTERNATIONAL (ASTM):


1.4 SUBMITTALS

A. Submit the following in accordance with Division 01, Submittals.

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

C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.

D. Product Data: Provide data for material description, physical properties, recommended storage conditions, shelf life, precautions, flexible flashings, joint cover sheet, and joint and crack sealants, with temperature range for application of waterproofing membrane.

E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

F. Testing and certification of compatibility of existing surfaces/finishes/substrates and new coating system.

G. Applicator: Provide documentation for the following:

1. Company specializing in performing the work of this section approved by manufacturer.

2. The contractor shall have completed three projects of a similar size and nature in the last three years.

H. Administrative or Close-Out Submittals:

1. Information Card(s)

   a. For each assembly, submit a photocopy or typewritten information card containing the information as listed at the end of this section.

I. Safety Data Sheets (SDS): Submit Safety Data Sheets with each specification section and include with Safety Plan.
1.5 QUALITY ASSURANCE

A. Qualifications of Applicator
   1. Applicator shall be approved in writing by the system manufacturer and shall have a minimum of 5 years experience as an approved applicator with the manufacturer.
   2. Contractor shall be certified/approved to provide the required warranty.
   3. Applicator shall also have applied 5 installations of similar size and scope as this project, within the previous 3 years.

1.6 PRE-WATERPROOFING CONFERENCE

A. Prior to starting application of waterproofing system, arrange and attend a pre-waterproofing conference to ensure a clear understanding of drawings and specifications. Give the Consultant/Engineer 7 days advance written notice of the time and place of the meeting. Ensure that the mechanical and electrical subcontractor, flashing and sheet metal subcontractor, and other trades that may perform other types of work on or over the membrane after installation, attend this conference.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's unopened and undamaged containers bearing the following information:
   1. Name of manufacturer.
   2. Name of contents and products code.
   4. Lot or batch number.
   5. Storage temperature limits.
   6. Shelf life expiration date.
   7. Mixing instructions and proportions of contents.
   8. Safety information and instructions.
   9. Store and protect materials from damage and weather in accordance with manufacturer's instructions.

B. Store materials at temperatures between 50 and 90 degrees F (10 and 32 degrees C). Keep out of direct sunlight.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Do not apply if ambient temperatures are expected to fall below 40 degrees F (5 degrees C) or if rain is expected before the application has time to cure.

1.9 WARRANTY

A. Contractor and manufacturer warranties shall be exclusive and independent of each other. Each warranty shall be issued directly to the Owner and dated as noted below.
B. Furnish the Three-Year Contractor Warranty as provided at the end of this section. The warranty period shall be not less than 3 years from the date of substantial completion.

1. If the Contractor fails to perform repairs within 72 hours of written notification, the warranty will not be voided because of work being performed by others to repair deficiencies/failures regardless of manufacturer’s warranty to the contrary.

C. Manufacturer's Warranty

1. Furnish manufacturer's no monetary limitation (no-dollar-limit) materials and workmanship warranty for the system. The warranty period shall be not less than 10 years from the date of substantial completion. The warranty shall be issued directly to the Owner. The warranty shall provide that if within the warranty period the system becomes non-watertight or shows evidence of failure, rupture or excess weathering due to deterioration of the system resulting from defective materials or installed workmanship the repair or replacement of the defective materials and correction of the defective workmanship shall be the responsibility of the manufacturer. Repairs that become necessary because of defective materials and workmanship while the system is under warranty shall be performed within 7 days after notification, unless additional time is approved by the Owner. Failure to perform repairs within the specified period of time will constitute grounds for having the repairs performed by others and the cost billed to the manufacturer.

PART 2 - PRODUCTS

2.1 APPROVED MANUFACTURERS

A. STO
B. Sonneborne
C. Pecora
D. BASF
E. The above manufacturers and their specific systems shall include their primer, leveling material, patch and crack repair materials are approved contingent on providing the specified warranty including the product being mildew resistant.

2.2 MEMBRANE COMPOUND MATERIAL

A. A primer/sealer and two-coat elastomeric system, specifically designed for application onto concrete surfaces for vehicular traffic is required.

B. Contractor is to provide a coating system, which adheres to this scope of work, and is installed in accordance with the manufacturer's printed instructions. Catalog data describing the specific coating system intended to be used, and application procedures is required.

2.3 ACCESSORIES

A. Surface Primer: Manufacturers, recommended solvent based masonry primer.

B. Foundation and Saturation Coats: Foundation or filler coat (highly flexible water based acrylic emulsion coating; for moving cracks.

C. Flashing Fabric: Polyester, non-woven, stitch bonded, heat-set fabric to be used at all locations.
PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify substrate surfaces are durable; free of frozen matter, dampness, loose particles, cracks, pits, projections, or foreign matter detrimental to adhesion or application of waterproofing system.

B. Verify that substrate surfaces are smooth, and not detrimental to full contact bond of waterproofing materials.

3.2 EXTERIOR CONCRETE PREPARATION

A. Prior to installation of the fluid applied waterproofing on the locations indicated on the drawings, the following is required.

1. Remove all loose gravel, sand and other debris.
2. Pressure wash entire surface of concrete with high pressure 2500-3000 psi.
3. Repair to all cracks and deficiencies in the concrete surfaces.
4. Use air pressure to remove all loose debris and dry surface.
5. Provide leveling grout using a modified latex product for the exposed gravel surfaces.

B. Care shall be taken during the preparation and application process.

1. Contractor is responsible for any and all damages that result from the removal, preparation and application process.
2. This applies to this property, its occupants and all surrounding properties.
3. Protect adjacent surfaces not designated to receive waterproofing.

C. Surface must be free of all contaminants and cleaned of all dirt, loose excess gravel/concrete or foreign materials.

1. Chalking must be minimized to acceptable levels for proper application of primer and coating system.

D. In addition to requirements of 03 90 03, Concrete Restoration for Top Deck.

1. All cracks and voids shall be filled and patching completed as necessary.
2. See following criteria for repair of cracks in concrete surfaces.

<table>
<thead>
<tr>
<th>Crack Size and Product Description And Method of Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>.004-.010 (4-10 mils) Hairline shrinkage cracks of this size will usually be filled by normal procedures.</td>
</tr>
<tr>
<td>.010-.032 (10-32 mils) Elastomeric coatings will fill and span cracks up to 1/32 inch. A credit card width or greater needs to be treated with a manufacturers recommended filler material in a separate step.</td>
</tr>
<tr>
<td>.032-.125 (32-125 mils) Cracks from 1/32 inch to 1/8 inch (125 mils) require treatment with the manufacturers recommended sealant applied in a 2 inch wide band, crowned at the center and feathered at the edges to conceal the repair.</td>
</tr>
</tbody>
</table>
3.3 SPECIAL PRECAUTIONS

A. Protect waterproofing materials during transport and application. Do not dilute primers and other materials, unless specifically recommended by materials manufacturer. Keep containers closed except when removing contents. Do not mix remains of unlike materials. Thoroughly remove residual materials before using application equipment for mixing and transporting materials. Do not permit equipment on the project site that has residue of materials used on previous projects. Use cleaners only for cleaning, not for thinning primers or membrane materials. Ensure that workers and others who walk or rest on cured membrane wear clean, soft-soled shoes to avoid damaging the waterproofing materials.

3.4 APPLICATION

A. Brush apply coating in accordance with manufacturer's instructions.
B. Thoroughly work coating materials into joints, crevices, and open spaces.
C. Apply a minimum of 2 coats of waterproofing material at a total 32 mils minimum thickness.
D. Apply waterproofing material free of runs, drops, ridges, waves, laps, brush marks, and variations in color.
E. Provide fabric reinforcing at all angle, scuppers and directional changes.

3.5 FIELD QUALITY CONTROL

A. Moisture Test - Prior to application of fluid-applied waterproofing, measure moisture content of substrate with a moisture meter in the presence of the Consultant/Engineer. An acceptable device is the Delmhorst Moisture Meter, Model BD7/2D/CS, and Type 21E. Similar meters by other manufacturers, which are suitable for the purpose, may be used as approved by the Contracting Officer. Do not begin application until meter reading indicates “dry” range.
B. Film Thickness - Measure wet film thickness every 100 square feet during application by placing flat metal plates on the substrate or using a mil-thickness gauge especially manufactured for the purpose.

3.6 INFORMATION CARD(S)

A. Install a photoengraved or etched aluminum information card (for exterior display) at location to be determined by Consultant/Engineer. Information listed on the Information Card is located at the end of this section
B. A card shall be provided for each differing assembly and be a minimum size of 8-1/2 by 11 inches.
C. Secure with removable stainless steel screws at approved location.
D. A hard copy of each card is required in the Close-Out Documents.

3.7 UNIT PRICED QUANTITIES

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

END OF SECTION 07 14 03
CONCRETE DECK COATING FOR VEHICULAR TRAFFIC

WHEREAS, ______________________________, of ______________________________, Telephone: ______________________________, herein called the "Waterproofing Contractor", has performed Elastomeric Coating work on the following project:

Owner: _____________________________________________________________
Address: ___________________________________________________________
Telephone: __________________________________________________________

Name and Type of Building: _____________________________________________
Address: ___________________________________________________________

Area of Work: _________________________________________________________
Date of Acceptance: ___________________________________________________

Guarantee Period: Three Years   Date of Expiration: ______________________________

AND WHEREAS, the Waterproofing Contractor has contracted to warrant said work against leaks and faulty or defective materials and workmanship for the designated Guarantee Period; NOW, THEREFORE, the Waterproofing Contractor hereby warrants, subject to the terms and conditions herein set forth, that during the Warranty Period he will at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work, and as are necessary to maintain said work in watertight condition.

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

1. Warranty covers only repairs made by contractor to said waterproofing under this contract and does not cover work by others or future defects not directly attributable to work performed.

2. Specifically excluded from this Warranty are damages to the work, other parts of the building and building contents caused by: a) lightning, windstorm, hailstorm, and other unusual phenomena of the elements; b) fire c) failure of the waterproofing system substrate including cracking, but excluding hairline cracking, settlement, excessive deflection, deterioration, and decomposition; d) faulty construction of parapet walls, copings, vents, equipment supports, and other edge conditions and penetrations not included in the project; e) repeated vapor condensation on the bottom of waterproofing; and f) activity on the waterproofing by others including construction contractors, maintenance personnel, other persons, and animals whether authorized or unauthorized by Owner. When the work has been damaged by any of the foregoing causes, the Warranty shall be null and void until such damage has been repaired by the Owner or by another responsible party so designated.

3. The Waterproofing Contractor is responsible for damages to work covered by this Warranty.
4. During the Warranty Period, if the Owner allows alteration of the work by anyone other than the Waterproofing Contractor, including cutting, patching and maintenance in connection with penetrations, attachment of other work, and positioning of anything on the waterproofing, this Warranty shall become null and void upon the date of said alterations, but only to extent said alterations affect work covered by this Warranty. If the Owner engages the Waterproofing Contractor to perform said alterations, the Warranty shall not become null and void, unless the Waterproofing Contractor, prior to proceeding with said work, shall have notified Owner in writing, showing reasonable cause for claim that said alterations would likely damage or deteriorate the work, thereby reasonably justifying a termination of this Warranty.

5. During the Warranty Period, if the original use of the waterproofing is changed and it becomes used for, but was not originally specified for other use or service more severe than originally specified, this Warranty shall become null and void upon the date of the said change, but only to the extent said change affects work covered by this Warranty.

6. The Owner shall promptly notify the Waterproofing Contractor of observed, known or suspected leaks, defects or deterioration, and shall afford reasonable opportunity for Waterproofing Contractor to inspect the work, and to examine the evidence of such leaks, defects or deterioration.

7. Contractor will promptly inspect reported leaks and if found to be attributed to work performed, make the required repairs.
   a. If leaks are found to be from other sources, contractor shall so inform owner and make the needed repairs. There will be no charge for this service call.
   b. Future service calls and leak repairs not attributed to contractors work will be for Owner's account. Cost of repairs will be at a fair and reasonable rate. Materials required will be at cost plus 15%.

8. This Warranty is recognized to be the only warranty of Waterproofing Contractor on said work, and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to him in cases of waterproofing failure. Specifically, this Warranty shall not operate to relieve Waterproofing Contractor of his responsibility for performance of the original work, regardless of whether Contract was a contract directly with Owner, or a subcontract with Owner's General Contractor.

IN WITNESS WHEREOF, this instrument has been duly executed this ________ day of __________________, 20______.

Waterproofing Contractor's Signature:

Typed Name:

As Its (position):

Date:
CONCRETE DECK COATING FOR VEHICULAR TRAFFIC INFORMATION CARD

1. Contract Number: ________________________________

2. Building Number and Location: ________________________________

3. Project Specification Number: ________________________________

4. Substrate:
   a. Type: __________________________________________

5. Repair Materials:
   a. Type: __________________________________________
   b. Manufacturer: ________________________________

6. Sealants:
   a. Type: __________________________________________
   b. Manufacturer (Name / Address / Phone No.): ________________________________

7. Primer
   a. Type: __________________________________________
   b. Manufacturer (Name / Address / Phone No.): ________________________________

8. Base Coat Application:
   a. Type: __________________________________________
   b. Mil Thickness (Dry): ________________________________
   c. Method: (spray/trowel/brush)
   d. Manufacturer (Name / Address / Phone No.): ________________________________

9. Reinforcing:
   a. Type: __________________________________________
   b. Weight: ________________________________
   c. Manufacturer: ________________________________

10. Top Coat:
    a. Type: __________________________________________
    b. Mil Thickness (Dry): ________________________________
    c. Method: (spray/trowel/brush)
    d. Manufacturer: ________________________________

11. Statement of Compliance or Exceptions: ________________________________

12. Date System Completed: ________________________________

13. Warranty Period: ________________________________

14. Coating Contractor (Name / Address / Phone No.): ________________________________

15. Prime Contractor (Name / Address / Phone No.):

Contractor's Signature: ________________________________ Date: ________________________________
SECTION 07 42 13.04 – METAL WALL PANELS, PERFORATED

PART ONE - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 01 Specification Section, and Division 05 Specification Section “Structural Steel Framing” apply to this Section.

1.2 SUMMARY

A. This Section includes

1. Single skin exposed fastener perforated aluminum screen panel system over primary and secondary steel framing.

1.3 PERFORMANCE REQUIREMENTS

A. Basis of Design

1. The Centria EcoScreen Perforated Screen Wall type BR5-36 23% perforated 1½” corrugated aluminum panels with the “reverse” hole pattern were used as the basis of design for the horizontally oriented enclosure panels occurring at the floor slab levels of this Project.

2. The Centria EcoScreen Perforated Screen Wall type MR3-36 23% perforated 3” corrugated aluminum panels with the “reverse” hole pattern were used as the basis of design for the vertically oriented enclosure panels occurring at the ramp of this Project.

B. Alternative aluminum panel manufacturers/suppliers:

1. The following manufacturer/suppliers may be used as alternative sources for aluminum panels as long as the products meet the requirements of this Project and are acceptable to the Owner:

   a. CMI Corrugated Metal Industries
   b. ATAS International

C. General: Provide metal wall panel assemblies meeting performance requirements as determined by application of specified tests by a qualified testing agency on manufacturer’s standard assemblies.

D. Structural Performance: Provide metal wall panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated, per ASTM E 72:

1. Wind Loads:

   a. Zone 5: 72.4 psf
   b. Zone 4: 54 psf
2. Limits of Deflection: Metal wall panel assembly shall withstand given wind pressures with the following allowable deflection:
   
a. Maximum allowable deflection: Single skin panels greater than 1-inch in depth shall be limited to L/120 deflection of panel perimeter normal to plane of wall.

E. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structural caused by thermal expansion and contraction.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1093 to conduct the testing indicated, as documented according to ASTM E 548. Quality Assurance Program shall be that of ACI 530, Level 3.

B. Source Limitations for Aluminum Panels: Provide aluminum panel and panel accessories from a single manufacturer.

C. Manufacturer Qualifications: Approved manufacturer with minimum 10 years of experience in the manufacture of similar products in successful use in similar applications.

1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements within time allowed for substitution review:
   
a. Product data, including certified independent test date indicating compliance with the requirements of this Project.

b. Samples of each type of aluminum panel and accessory.

c. Project references: Minimum of 5 installations not less than 5 years old with Owner and Architect contact information.

d. Sample warranty.

2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.

D. Installer Qualifications: Experienced installer with a minimum of 5 years of experience with successfully completed projects of a similar nature and scope.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect aluminum wall panel products during shipping, handling and storage to prevent staining, denting, deterioration of components and other damage.

B. Deliver, unload, store and erect aluminum wall panel products and accessory items without misshaping panels or exposing panels to surface damage from weather and construction operations.
1.6 ADMINISTRATIVE REQUIREMENTS

A. Pre-installation Meeting: Conduct pre-installation meeting at site attended by Owner, Engineer, manufacturer’s representatives and other trade contractors.
   1. Coordinate building framing and secondary panel support framing in relation to metal wall panel assembly.

1.7 INFORMATIONAL SUBMITTALS

A. Material Test Reports: From a qualified testing agency indicating and interpreting test results of the following for compliance with requirements indicated:
   1. Each type of aluminum panel required.
   2. Screws for attachment of each type of aluminum panel to steel support framing.

B. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
   1. Each type of aluminum panel required.
   2. Screws for attachment of each type of aluminum panel to steel support framing.

C. Qualification information: For installer firm.

D. Manufacturer’s warranty: Submit sample warranty.

1.8 ACTION SUBMITTALS

A. Product Data: Manufacturer’s data sheets for specified products and connectors.
   1. Include data indicating compliance with performance requirements.

B. LEED Submittals:
   1. Credit MR 4.1: Product data indicating the following:
      a. Percentages by weight of post-consumer and pre-consumer recycled content.
      b. Total weight of products provided.

C. Shop Drawings: Provide shop drawings prepared by manufacturer or manufacturer’s authorized Installer. Include full elevations, details of each condition of installation and attachment. Provide details of all required trim and extrusions needed for a complete installation.
   1. Indicate points of supporting structure that must coordinate with metal wall panel assembly installation.
   2. Note locations where separation of dissimilar metals is required and indicate method to be used.
3. Indicate adjacent material types and methods to be used to prevent staining effect on metal wall panels caused by water runoff.

D. Samples for Initial Selection: For each product specified. Provide representative color charts of manufacturer’s full range of colors.

E. Samples for Verification: Provide 12-inch section of each type of panel showing finishes and perforation patterns. Provide 12-inch long pieces of trim pieces and other exposed components.

1.9 WARRANTY

A. Special Manufacturer’s Warranty: On manufacturer’s standard form, in which manufacturer agrees to replace or repair components of metal wall panel assemblies that fail in materials and workmanship with two-years from date of Substantial Completion.

1.10 CLOSEOUT SUBMITTALS

A. Maintenance Data.

PART TWO - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Provide basis of design product or comparable product approved by Owner and Engineer prior to bid

1. Centria Architectural Systems, Moon Township, PA 15108-2944. Tel: 800 759 7474. Tel: 412 299 8000. Fax: 412 299 8317. Email: info@CENTRIA.com. Web: www.CENTRIA.com

2.2 METAL WALL PANEL MATERIALS

A. Aluminum face sheet: Smooth surface coil-coated, ASTM B209, 3003-H14 alloy, 0.040 inch nominal thickness

2.3 PERFORATED METAL WALL PANELS

A. Metal Wall Panels, General: Factory-formed, exposed fastener panels with interconnecting side joints, fastened to supports with exposed fasteners.

B. Panel Profile: Ribbed profile with lap joint


2. Panel Coverage: 36 inches

3. Panel Height: 1.50 inches
4. Rib Spacing: 5 at 7.20 inches on center.

C. Panel Profile: Ribbed profile with lap joint
   2. Panel Coverage: 36 inches.
   3. Panel Height: 3.0 inches.
   4. Rib Spacing: 3 at 12 inches on center.

D. Pattern and Perforation: Reverse pattern, ¼ inch perforations at ½ inch spacing, with 23% open area.

2.4 METAL WALL PANEL FINISHES

A. Exposed Coil-Coated Finish System:
   1. Fluoropolymer Two-Coat System: 0.2-mil nominal primer with 0.8-mil nominal 70 percent PVDF fluoropolymer color coat, AAMA 620.
   2. Colors: Submittals shall be made to the Owner for approval prior to fabrication.

2.5 METAL WALL PANEL ACCESSORIES

A. Metal Wall Panel Accessories, General: Provide complete metal wall panel assembly incorporating trim, copings, fasciae, parapet caps, sills, inside and outside corners, and miscellaneous flashings. Fabricate accessories in accordance with SMACNA Manual. Provide manufacturer’s factory-formed clips, shims, flashings and caps for a complete installation.

B. Formed Flashing and Trim: Match material, thicken, and color of metal wall panel face sheets.

C. Fasteners: Self tapping 300 series stainless steel screws, No. 14 minimum, hex-head, and other acceptable fasteners recommended by panel manufacturer.

PART THREE - EXECUTION

3.1 EXAMINATION

A. Examine metal panel support substrate with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal wall panels.

B. Support Substrate: Confirm that support substrate is within tolerances acceptable to metal wall panel system manufacturer.

   1. Maximum substrate and framing deviations from flat plane acceptable:
      a. 1/4-inch in 20 feet vertically or horizontally.
b. 1/2-inch across building elevation.

c. 1/8-inch in 5 feet.

C. Framing: Inspect framing that will support metal panels to determine if support components are installed as indicated on reviewed shop drawings. Confirm presence of acceptable framing members at recommended spacing to match installation requirements of metal wall panels. Coordinate with the requirements of the structural engineer’s construction documents.

D. Advise General Contractor, in writing, of out-of-tolerance work and other deficient conditions prior to proceeding with metal wall panel installation. Coordinate with the requirements of the structural engineer’s construction documents.

3.2 SECONDARY FRAMING INSTALLATION

A. Secondary Metal Sub-girt Framing: Install secondary sub-girt framing components to tolerances indicated, as shown on reviewed shop drawings. Install secondary metal framing and other metal panel supports per ASTM C 1007 and metal wall panel manufacturer’s recommendations. Coordinate with the requirements of the structural engineer’s support framing.

3.3 METAL WALL PANEL INSTALLATION

A. General: Install metal wall panels in accordance with reviewed shop drawings and manufacturer’s recommendations. Install metal wall panels in orientation, sizes and locations indicated. Anchor metal wall panels and other components securely in place.

B. Attach panels to metal framing using recommended screws, fasteners, sealants and adhesives indicated on reviewed shop drawings.

1. Provide escutcheons for pipe and conduit penetrating panels.

2. Dissimilar Materials: Where elements of metal wall panel system will come into contact with dissimilar materials, separate faces and edges in contact with dissimilar materials utilizing non-metallic shims or closed cell foam material at each fastening point as recommended by manufacturer.

3.4 ACCESSORY INSTALLATION

A. General: Install metal wall panel accessories with positive anchorage to building. Coordinate installation with flashings and other components.

1. Install components required for a complete metal wall panel assembly, including trim, copings, corners and similar items.

2. Comply with performance requirements and manufacturer’s written installation instructions.

3. Set units true to line and level as indicated.
3.5 CLEANING AND PROTECTION

A. Remove temporary protective films. Clean finished surfaces as recommended by metal wall panel manufacturer. Maintain in a clean condition during construction.

B. Replace damaged panels and accessories that cannot be repaired by finish touch-up or minor repair.

END OF SECTION
SECTION 07 55 03 - MODIFIED BITUMEN SHEET ROOFING SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Work of this section includes a three-ply roof membrane system consisting of two-ply shingle-fashioned modified bitumen base sheet assembly fully adhered in adhesive, not asphalt followed by a granule-surfaced, SBS modified bitumen cap sheet fully adhered or torch applied for Roof Areas A, B and C.

1. Two-ply SBS modified bitumen membrane flashings in a woven application is required.

B. For conventional low-sloped roof areas (new construction):

1. Cap sheet shall have a white or off-white, granular surfaced cap sheet.

2. Roof system attachment to the minimum 22 gage metal and concrete roof decks shall be in accordance with FM 1A-120 requirements.

   a. Mechanical fasteners shall extend through the bearing surface of the roof deck a minimum 3/4-inch. Fasteners shall not penetrate lower metal deck flutes. Fasteners shall be in accordance with the requirements of FM Loss Prevention Data Sheets.

   b. Adhere insulations using 4’ by 4’ boards to concrete deck.

   c. Increased fastener or adhesive densities shall be provided at perimeter and corners in accordance with FM requirements. Dimensional extents of perimeters and corners shall be as defined by the requirements of ASCE 7-05.

C. Roof Insulation assembly shall:

1. Provide a minimum R-Value of 10 per roof area and tapered slope as shown on drawings.

2. Based on slopes provided with decks, ensure roof areas have a minimum slope of 1/8”/1’ for primary and 1/4”/1’ for secondary slope.

3. Adhere to wind and fire ratings specified.

4. Be covered under roof warranty.

D. Sheet metal flashings and accessories are required as specified in Section 07 60 03, Sheet Metal for Building Envelope and Fencing, and the required details for the various penetrations and terminations are shown on the drawings.

E. Fume recovery system, charcoal filters on air intakes and low-fuming asphalt are required when roof asphalt is being used for any portion of the roof. Charcoal intakes are also required when adhesives, solvents and coatings are used.

1.2 RELATED REQUIREMENTS

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

B. Section 02 04 03: Cutting and Patching for Building Envelope

C. Section 02 05 03: Demolition and Removal for Building Envelope
D. Section 02 82 03: Engineering Control of Asbestos Containing Material

E. Section 03 90 03: Concrete Restoration for Top Deck

F. Section 04 50 03: Select Masonry Replacement Restoration and Cleaning

G. Section 06 10 03: Rough Carpentry for Roofing

H. Section 07 14 03: Concrete Deck Coating for Vehicular Traffic

I. Section 07 60 03: Sheet Metal for Building Envelope and Fencing

J. Section 07 91 03: Prefabricated Parking Garage Joints

K. Section 07 92 03: Sealants for Building Envelope

L. Section 08 81 03: Fenestration Replacement

1.3 REFERENCES

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

B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):


C. ASTM INTERNATIONAL (ASTM):


5. ASTM D 226 (1997a) Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing


D. AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE):

E. FACTORY MUTUAL ENGINEERING AND RESEARCH CORPORATION (FM):
   1. FM AS 4470 (Latest Edition) Class I Roof Covers

F. INTERNATIONAL CODE COUNCIL

G. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
   1. NRCA Roofing and Waterproofing Manual, Fifth Edition
   2. NRCA Construction Details for Modified Bitumen Sheet Roofing
   3. NRCA/ARMA/SPRI Repair Manual for Low Sloped Roof Systems

H. UNDERWRITERS' LABORATORIES, INC. (UL):
   1. UL 790 (Latest Edition) tests for Fire Resistance of Roof Materials

1.4 SUBMITTALS

A. Submit the following in accordance with Division 01, Submittals.

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

C. Approval of Applicator: The modified bitumen roofing system manufacturer's written approval of the applicator for this specific roofing job and a statement, in writing, that the specified applicator requirements are met and the warranty can be provided.

D. Certificates of Conformance: The roofing and insulation manufacturer shall ensure and certify all material of the roofing system are compatible with each other, suitable for the specified use, and meet the requirements of the specifications.

E. Data and Instructions:
   1. Roofing and Insulation Manufacturer's Complete Catalog (three ring binder) with all applicable sections/items, which apply to this job clearly marked and/or indicated.
   2. Binder shall include detailed application instructions and manufacturer standard details.
   3. Explicitly identify in writing any differences between contract requirements and manufacturer’s instructions.
F. Drawings

1. Wood Nailers
   a. Show location and spacing of wood nailers that are required for securing insulation and for securing the roof membrane and flashing systems.

2. Tapered Roof Insulation System
   a. Show a complete description of the procedures for the installation of each phase of the system indicating the type of materials, thicknesses, identify codes, sequence of laying insulation, location of ridges and valleys, special methods for cutting and fitting of insulation and special precautions.
   b. The drawings shall be based on field measurements

3. Insulation: Include minimum thickness of insulation for steel decks and fastener pattern for insulation on steel decks.

G. Mockups: Provide field mockups of sheet metal assemblies where noted on drawings.

H. Samples: One sample of the roof membrane and insulation materials and each associated accessory shall be provided at the Pre-Construction Conference.

I. Warranty: Copy of warranty application from contractor to modified bitumen roof manufacturer with specific criteria in accordance with these Construction Documents.

J. Records

1. Information Card(s)
   a. For each assembly, submit a photocopy or typewritten information card containing the information as listed on the listed at the end of this section.

K. Safety Data Sheets (SDS): Submit Safety Data Sheets with each specification section and include with Safety Plan.

1.5 QUALIFICATION OF APPLICATOR

A. Qualifications of Applicator

1. Applicator shall be approved in writing by the system manufacturer and shall have a minimum of 5 years experience as an approved applicator with the specific manufacturer.

2. Contractor shall be certified/approved to provide the required warranty.

3. Applicator shall also have applied 5 installations of similar size and scope as this project, within the previous 3 years.

1.6 QUALITY ASSURANCE

A. Fire Safety

1. The complete roof covering assembly shall have a UL 790, Class A Classification, be listed as "fire classified" in UL BMD and bear the UL Label or be listed as a Class I Roof Deck Construction in FM P7825 for the slopes indicated.
B. Insulation on Non-Combustible Decks

1. Roof insulation shall have a flame spread rating not greater than 25 and a smoke developed rating not greater than 150, exclusive of covering, when tested in accordance with ASTM E 84.

2. Insulation bearing the UL label and listed in the UL BMD as meeting the flame spread and smoke developed ratings will be accepted in lieu of copies of test reports.

3. Compliance with flame spread and smoke developed ratings will not be required when insulation has been tested as part of a roof construction assembly of the type used for this project and the construction is listed as fire-classified in the UL BMD or listed as Class I roof deck construction in the FM P7825.

4. Insulation tested as part of a roof construction assembly shall bear UL or FM labels attesting to the ratings specified herein.

1.7 PRE-CONSTRUCTION CONFERENCE

A. Prior to the application of any construction, there will be a Pre-Construction Conference at the job site to ensure:

1. A clear understanding of the drawings and specifications.

2. Clear understanding of scope of work for all interested parties.

3. Coordination of work while maintaining the function and use of the building.

4. Safety requirements

B. All personnel that will be involved with the project, including the project manager, foreman, etc. must be present at the Pre-Construction Conference.

1.8 DELIVERY AND STORAGE

A. Delivery:

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

2. Materials shall be delivered to the site in the original sealed containers or packages, and shall bear the manufacturer's name and brand designation.

3. Each container of asphalt shall be plainly marked with the specification number, type, and class, along with the FP, FBT, and EVT.

B. Storage:

1. All roofing and insulation materials shall be stored in a watertight container at the job site, with materials secured in this container at the end of each day.

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

3. Materials shall be stored, handled, and installed in a manner to protect them from all damage and wetting and moisture absorption during the entire construction period.

4. Rolled materials shall be stored on end.

5. Immediately remove damaged materials from the job site and replace with new material.
C. Handling:
   a. Select and operate material handling equipment so as not to damage applied roofing and damage to grounds.
   b. Prevent damage to edges and end of roll materials.

1.9 ENVIRONMENTAL CONDITIONS

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

1.10 DIFFERING SITE CONDITIONS

A. The contractor will notify the Consultant/Engineer immediately of any unforeseen site condition.
B. The contractor will be required to secure the jobsite and "dry-in" the roofing system until the problem is resolved.

1.11 PROTECTION OF PROPERTY

A. Install protective measures on grounds and walls (as needed) to protect project conditions.
B. Ensure the roofing system is watertight at the end of each day’s construction and during inclement weather.

1.12 WARRANTY

A. Contractor and manufacturer warranties shall be exclusive and independent of each other. Each warranty shall run directly to the Owner and be dated the substantial completion date or later.
B. Furnish contractor warranty for specific system as provided at the end of this section. In no event shall warranty period be less than three (3) years from the date of substantial completion of the work.
   1. If the Contractor fails to perform repairs within seventy-two (72) hours of written notification, the warranty will not be voided because of work being performed by others to repair roofing regardless of manufacturer’s warranty to the contrary.
C. Manufacturer’s Warranty: Furnish the roof manufacturer’s twenty (20) year, no dollar limit warranty to include the following:
   1. The warranty shall cover all associated costs for the repair and/or replacement of defective materials of the roof system, including insulation.
   2. The warranty shall provide that if within the warranty period the roof deteriorates, splits, weathers excessively or shows any other symptoms of failure, the complete corrective action shall be the responsibility of the manufacturer.
   3. The warranty shall include wind events up to 74 miles per hour.

PART 2 - PRODUCTS

2.1 DESCRIPTION OF ROOFING SYSTEM

A. SBS Modified Bitumen Three-Ply Roof System
B. Deck Type

1. Over the metal deck, provide the mechanically fastened base layer of insulation.

2. Over the concrete deck, provide an adhered roof system.

C. Substrate: Deck

<table>
<thead>
<tr>
<th>Components</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof Insulation</td>
<td>As Specified</td>
</tr>
<tr>
<td>Type III or IV Asphalt/Mechanical Attachment</td>
<td>As Specified</td>
</tr>
<tr>
<td>Overlay Board / Coverboard</td>
<td>As Specified</td>
</tr>
<tr>
<td>SBS Modified Bitumen Base Sheet MB</td>
<td>2 ply</td>
</tr>
<tr>
<td>Type III or IV Asphalt</td>
<td>25 lbs/100 s.f.</td>
</tr>
<tr>
<td>SBS Modified Bitumen Cap Sheet RSS</td>
<td>1 ply</td>
</tr>
<tr>
<td>Manufacturer’s Cold Adhesive</td>
<td>Per Manufacturer</td>
</tr>
</tbody>
</table>

2.2 MATERIALS

A. Asphalt: ASTM D312, Type III or IV (low fuming).

B. Cold Process Adhesive:

1. Roof membrane manufacture’s adhesive specifically intended for the use of roof membrane adhesive and compatible with roof system components.

2. Apply at rate in accordance with manufacturer’s printed literature.

3. Adhesives shall adhere to all VOC limitations and requirements.

C. Roof Insulation: The following materials meeting the respective requirements, used as specified or required.

1. Perlite Board: ASTM C 728, minimum 3/4 inch and adhere to wind and fire ratings.

2. High Density fiber board, ASTM C 208, minimum 3/4 inch and adhere to wind and fire ratings.

3. Polyisocyanurate Board: ASTM C 1289
   a. Factory bonded between outer layers of felt, and maximum 4 feet x 8 feet in size for mechanically fastened applications and maximum 4’ by 4’ in size for adhered applications, with minimum compressive strength of 20 p.s.i.
   b. Polyisocyanurate board may be directly applied to metal and combustible roof decks, provided the board meets all fire-acceptable requirements specified in subparagraph "Fire Classification".
   c. Maximum thickness is 2.2 inches, unless otherwise approved.
4. Coverboard
   a. Overlay: 3/4-inch perlite or 3/4-inch HD fiber board, 4’x4’ maximum size.
   b. Use a coverboard in lieu the perlite or fiberboard overlay if required to attain the wind and fire ratings or warranty.
      1) 1/2" thick, 4’x4’ for adhered applications, 4’x8’ for mechanically fastened applications.
      2) Glass mat, modified gypsum roof board shall meet the minimum requirements of ASTM C 1177/C 1177M, flame spread – 0, smoke developed – 0, 500 psi Class A non-combustible, equal to Densdeck or Securock and compatible with manufacturer’s system products.

5. Tapered Roof Insulation
   a. One layer of the tapered roof insulation assembly shall be factory tapered to a slope of no less than 1/4-inch per foot on non-structurally sloped roof decks.
   b. Provide starter and filler blocks as required to provide the total thickness of insulation necessary to meet the specified.
   c. Mitered joints shall be factory fabricated and shall consist of two diagonally cut boards or one board shaped to provide the required slopes.
   d. Identify each piece of tapered insulation board by color or other identity coding system, allowing the identification of different sizes of tapered insulation board required to complete the roof insulation system.
   e. All roof areas shall have a finished slope of 1/4-inch / 1 foot, combining slopes of structure and use of tapered insulation.

6. Wood Nailers: Nailers for perimeter of roof and at penetrations and terminations, are specified under Section 06 10 03, Rough Carpentry, and the same thickness as the insulation in all locations.

7. Cants, Crickets and Tapered Edge Strips:
   a. Fabricated of the same material as the insulation or rigid perlite board, ASTM C 728.
   b. Cants shall have 4” vertical height.
   c. Wood cants shall be used where indicated or noted on drawings.

D. Base Sheet:
   1. Provide the manufacturer’s recommended base sheet over rosin paper and wood deck.

E. Membrane Base Sheet Assembly:
   1. Two-ply, modified bitumen base sheet installed in watersheding, shingle fashion with a maximum course exposure 17” unless approved in writing otherwise.
   2. Base Sheet: SBS Modified Bitumen, ASTM D 6163, Type I or ASTM 6164, Type I. Minimum 60 mil thickness for each sheet.
F. Cap Sheet:
   1. Granule surfaced-white in color.
   2. ASTM D 6163, Type II or ASTM 6164, Type II 130 mils thick minimum.
   3. External Class A, fire-rated sheet.
   4. Protect modified bitumen roofing system from direct exposure to the weather with mineral roofing granules, factory applied and applied in field at side and end laps immediately after membrane is laid in bitumen.
   5. Head laps of field cap sheet may be hot air welded via use of a hot air welder robot (leister) modified for modified bitumen membrane use and roller. Torch use is not acceptable.

G. Flashing Materials:
   2. Side laps secured and sealed in accordance with manufacturer’s printed requirements.

H. Primer: ASTM D 41.

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

J. Granules: Broadcast into adhesive bleed-out. Use manufacturer’s granules to match cap sheet. Color white. Adhere to manufacturer’s printed requirements for other surfacing material.

K. Adhesive/Bitumen Coating: Use manufacturer’s field coating for bleed-out coverage. This is required especially where hot air welded side and head laps are performed.

L. Fasteners: Provide non-corrosive fasteners as recommended by the Modified Bitumen Sheet manufacturer's printed instructions and meeting the requirements of FM A/S4470.
   1. For felts, use fasteners driven through metal discs or one-piece composite fasteners with heads not less than one inch in diameter or one inch square with rounded or 45-degree tapered corners.
   2. Masonry Walls and Vertical Surfaces:
      a. Fasteners for Securing Felts, Modified Bitumen Sheets and Metal Items to Masonry Walls and Vertical Surfaces:
         1) Hardened steel nails with flat heads, diamond shaped points and mechanically deformed shanks not less than one inch long.
         2) Use power-driven fasteners only when approved in writing.

M. Metal Discs (Tin Caps):
   1. Flat non-corrosive fasteners as recommended by the modified bitumen manufacturer's printed instructions and meeting the requirements of FM A/S4470; not less than 3 inches in diameter, when using screw type fasteners.
   2. Discs shall be formed to prevent dishing or cupping.
N. Walkpads:
   1. Walkways shall the manufacturer’s material and compatible with the modified bitumen sheet roofing installed as recommended by the modified bitumen sheet roofing manufacturer.
   2. Provide walkpads at each ladder bracket location on Roof Areas A, B and C.

O. Waterproof Underlayment
   1. To be installed beneath all sheet metal components and accessories.

PART 3 - EXECUTION

3.1 VERIFICATION OF CONDITIONS

   A. Ensure that the following conditions exist prior to application of the insulation materials.
      1. All surfaces on which insulation are to be applied shall be clean, smooth, dry, and free of projections.
      2. The condition of the surfaces shall be inspected and approved immediately before the work is begun.
      3. Confirmation shall be provided that any required deck inspection or certification by other parties has been completed.
      4. Check roof deck surfaces, including surfaces sloped to roof drains and outlets, for defects before starting work.
      5. The Roofing Contractor shall review and approve the surfaces for acceptability for roof work immediately before starting installation.
         a. Examine steel decks to ensure that panels are properly secured to structural members and to each other and that surfaces of top flanges are flat or slightly convex.
         b. Responsible party shall correct defects and inaccuracies in roof deck surface to eliminate poor drainage and hollow or low spots and perform the following.
            1) Install wood nailers the same thickness as insulation at eaves, edges, curbs, walls and roof openings for securing cant strips, edge metals, gutters and flashing flanges.
      6. Ensure all voids, gaps and openings are filled/covered to ensure no adhesive/bitumen drippage.
      7. Concrete Deck:
         a. Solidly apply asphalt primer to poured, pre-cast concrete decks at the rate of one gallon per 100 square feet of roof surface, stopping approximately 4 inches from joints between the pre-cast concrete units.
         b. Allow primer to dry thoroughly.
         c. Place felt strips, 4 inches or more in width, over joints, 2 inches on each side, between pre-cast concrete units in a heavy coating of cold-applied asphalt roof cement.
8. Steel Decks:
   a. Cover steel decks with a layer of insulation board of specified thickness to span the width of a deck rib opening and conforming to fire safety requirements.
   b. Secure with piercing or self-drilling, self-tapping fasteners of quantity and placement conforming to fire safety requirements.
   c. Secure with piercing or self-drilling, self-tapping fasteners of quantity and placement conforming to FM P7825.
   d. Insulation joints parallel to ribs of deck shall occur on solid bearing surfaces only, not over open ribs.
   e. Apply insulation in layers required with staggered joints.
   f. Lay insulation so that continuous longitudinal joints are perpendicular to direction of roofing, as specified in this section, and end joints of each course are staggered with those of adjoining courses.
   g. When using multiple layers of insulation, joints of each succeeding layer shall be parallel and offset in both directions with respect to layer below.
   h. Keep insulation 1/2 inch clear of vertical surfaces penetrating and projecting from roof surface.
   i. Not less than 20 pounds of asphalt per 100 square feet of roof deck shall be used for mopping each layer of insulation in place.
   j. Firmly embed each layer of insulation in continuous mopings of hot asphalt.
      1) Walk boards in to ensure full embedment
      2) Fill all voids in excess of 1/4 inch with insulation.

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

8. Insulation boards are installed smoothly and evenly, and are not broken, cracked or curled. Insulation is being roofed over on the same day the insulation is installed.

9. Apply self-adhering membrane underlayment where indicated prior to or in conjunction with roof membrane installation.

3.2 PREPARATION

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

B. Ensure continuity with air, vapor and/or moisture barriers of the other building envelope systems.

C. Priming of Surfaces: Prime surfaces at the rate of 0.75 gallon per 100 square feet or as recommended by the modified bitumen sheet manufacturer's printed instructions and allow to dry.
   1. Priming of Concrete and Masonry Surfaces:
      a. After surface dryness requirements have been met, coat concrete and masonry surfaces, which are to receive roof insulation and roofing materials uniformly with asphalt primer.
      b. Allow the primer to dry prior to application of the insulation, roofing and flashing.

   2. Priming of Metal Surfaces:
      a. Prime flanges of metal, prior to stripping into the roofing system in accordance with the modified bitumen manufacturer's printed instructions and allow to dry.

D. Heating of Asphalt:
   1. Break up solid asphalt on surface free of dirt and debris.
   2. Heat asphalt in kettle designed to prevent contact of flame with surfaces in contact with the asphalt.
   3. Kettles shall have visible thermometer and thermostatic controls set to the temperature limits specified herein.
      a. Keep controls in working order and calibrated.
      b. Use immersion thermometer, accurate within a tolerance of plus or minus 2 degrees F. to check temperatures of the asphalt frequently.
      c. If the temperature of the asphalt at the moment of application is below the minimum specified herein, analyze the sample as specified herein, and replace with new material if deficiencies are disclosed.
      d. If temperatures exceed maximums specified, remove asphalt from the site.
      e. Do not permit cutting back, adulterating or fluxing of asphalt.
4. Use fume recovery system on kettle unless approved otherwise.

5. Do not place kettles within 250 feet of occupied facilities.

3.3 APPLICATION

A. Apply roofing materials as specified herein, unless specified or recommended otherwise by the manufacturer's printed application instructions.

1. Keep roofing materials dry before and during application.

2. Unroll modified bitumen membrane sheets and allow to relax minimum of 30 minutes prior to installing sheets.

3. Do not permit phased construction of membrane system for hot applied system. All plies of the membrane shall be applied the same work day unless otherwise approved. No more than 3 days work may be installed without cap sheet being installed with the following contingencies.
   a. Roof contractor shall ensure bleed-out at all membrane seams.
      1) First ply of base flashing shall be installed daily with temporary seals (mastic/cement) along top edge and fastened to prevent slippage.
      2) Base sheet assembly may not be left exposed to inclement weather being forecast.
   b. Roof contractor shall thoroughly inspect the 2-ply base sheet assembly, make repairs and ensure all dirt, debris, moisture and other undesired containments are removed before installing the cap sheet.
   c. Exposure to inclement weather forecasted or not forecasted may be grounds for rejection.

4. Complete application of roofing in a continuous operation. Begin and apply only as much roofing in one day as can be completed the same day.

5. Apply 2 plies of membrane base sheet in shingle fashion, watershedding with a 17 inch exposure.

6. Adhere the specified temperatures for the asphalt and adhesives.

7. Stagger all insulation at tie-offs at end of each day’s work. Seal terminations and deck flutes to prevent moisture entry.

8. Stagger all insulation joints a minimum of 12” from adjacent boards and underlying boards.

9. Provide temporary roofing and flashing as specified herein prior to the application of the permanent roofing system.

B. Temporary Roofing and Flashing:

1. Provide temporary roofing and flashing where considerable work by other trades, such as installing antennas, pipes, ducts, is to be performed on the roof or where construction scheduling or weather conditions require protection of the building's interior before the permanent roofing system can be installed.

2. Cover all curbs fully and make watertight until equipment is installed.

3. Do not install temporary roofing over permanently installed insulation.

4. Provide rigid pads for traffic over the temporary roofing.
C. Temperature Limitations for Asphalt:
   1. Heat and apply asphalt at the temperatures specified below unless specified otherwise by the manufacturer's printed application instructions.
   2. Use thermometer to check temperature during heating and application. Have kettle attended constantly during heating process to ensure specified temperatures are maintained.
      a. Do not heat asphalt above its finished blowing temperature (FBT).
      b. Do not heat asphalt between 500 and 525 degrees F. for longer than four consecutive hours.
      c. Do not heat asphalt to the flash point (FP).
   3. Apply asphalt and embed sheet materials when the temperature of the asphalt is within plus or minus 25 degrees F. of the equiviscous temperature (EVT).
   4. Before heating and application of the asphalt, refer to the asphalt manufacturer's label or bill of lading for the FBT, FP and EVT of the asphalt used.

D. Modified Bitumen Sheets (Base Sheet Assembly and Cap Sheet):
   1. Two-ply base sheet assembly shall be fully adhered in hot asphalt.
   2. Cap sheet shall be installed with cold adhesive in accordance with manufacturer’s printed literature.
   3. Sheets shall be watertight and visually free of pinholes, particles of foreign matter, un-dispersed raw material or other manufacturing defects that might affect serviceability.
   4. Edges of the seams shall be straight and flat so that they may be seamed to one another without forming fish mouths, wrinkles or other voids.
   5. Provide tight smooth laminations of each membrane layer without wrinkles, ridges, buckles, kinks, fishmouths, or voids.
   6. Stagger end laps a minimum of 36 inches from preceding courses.
   7. Offset cap ply from base sheet assembly head laps.
   8. Completed roof membrane construction shall be free of air pockets, blisters, ridges, fishmouths, visible asphalt bleed out, or open seams. Apply granules into bleed out or coat bleed mix.
   9. Hot air weld head laps of cap sheet with hot air welder modified for use with modified bitumen roof membrane.
   10. Contractor shall repair voids daily.

E. Flashing:
   1. Install base ply base flashing in hot asphalt.
   2. Install cap ply base flashing in manufacturer’s cold adhesive. Hot air weld side laps with hand held hot air welder and roller.
3. Apply modified bitumen sheet flashing in the angles formed where the roof deck abuts walls, curbs, ventilators, pipes and other vertical surfaces, in accordance with the membrane manufacturer's printed application instructions and where necessary to make the work watertight.

4. All penetrations (roof drains, vents, and pipes) shall be flashed with a target sheet square in size equal to roll width less selvage edge.

5. Metal flashing collars and cap flashings are specified under Section 07 60 03 Sheet Metal for Building Envelope and Fencing. Do not set metal flashing in hot asphalt.

6. Flashing at Roof Drain:
   a. Flashing for roof drains are specified under Section 07 60 03, Sheet Metal for Building Envelope and Fencing.
   b. Roof system shall be made watertight at roof drains daily.

7. Voids in flashings shall be repaired to new condition to include replacement of flashing piece.

8. Flashing shall extend 6” onto field of roof.

F. Offset side laps of base flashing a minimum of 12 inches from field membrane head/side laps.

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

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

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

   2. Broadcast granules into bitumen bleed-out or field apply manufacturer’s coating over bleed out.

   3. Temporary Flashing for Permanent Roofing:
      a. Provide temporary flashing at drain curbs, walls and other penetrations and terminations of roofing felts until the roofing membrane is complete and the permanent flashings are applied.
      b. Temporary flashings shall consist of one ply of ply felt applied in a trowel coat of asphalt roof cement applied to a primed surface and finished with a surface coat of asphalt roof cement.
      c. Remove temporary flashing before applying permanent flashing.
4. Temporary Walkways, Runways and Platforms:
   a. Do not permit storing, walking, wheeling and trucking directly on applied roofing materials.
   b. Provide temporary walkways, runways and platforms of smooth clean boards or planks or plywood over loose laid membrane or protection sheet as necessary to avoid damage to applied roofing materials and to distribute weight to conform to indicated live load limits of roof construction.
   c. Use clean rubber-tired equipment for roofing work.

3.4 FIELD QUALITY CONTROL

   A. Perform field test in the presence of the Owner's representative. Notify the Consultant/Engineer twenty-four (24) hours before performing tests.

   B. Roof Drain Test: After the roofing system is complete, but prior to Owner acceptance of the roofing, perform the following test of roof drains and adjacent roofing for water tightness.
      1. Plug roof drains and fill with water for 24 hours. To ensure some drainage from the roof, do not test all drains at the same time.
      2. Measure water at the beginning and at the end of the 24-hour period.
      3. If precipitation occurs during the test period, repeat the test.
      4. If the water level falls, remove water, thoroughly dry and inspect the installation and repair or replace roofing at the drain.
      5. Repeat the test until there is no water leakage.
      6. Completed roof membrane system including insulation shall be free of voids, defects and moisture. Repairs shall be performed by Contractor on a daily basis.

   C. Protect roof system from moisture intrusion and other forms of damage during course of construction project. Replacement of moisture/damage to new is required.

   D. Repair or remove deficiencies/voids (air pockets, wrinkles, fishmouths, tears, cuts, abrasions, contamination, standing/ponding water areas, etc.) daily.

   E. Project shall be free of moisture/damage and deficiencies/voids.

3.5 MANUFACTURER'S FIELD INSPECTION

   A. Manufacturer's technical representative shall visit the site as necessary during the installation process to ensure roofing system, flashings, and other components are being installed in a satisfactory manner for warranty requirements.
      1. Owner shall be notified in writing three (3) days prior to the site visit.

   B. Manufacturer's technical representative shall perform a field inspection of the installation at substantial completion and prior to issuance of warranty.

   C. Within three (3) days, after each site visit, a report, signed by the manufacturer's technical representative, shall be submitted to the Consultant/Engineer noting the overall quality of work, deficiencies and any other concerns, and recommended corrective actions in detail.

   D. Notify Consultant/Engineer a minimum of three (3) working days prior to site visit by manufacturer's technical representative.
3.6 INFORMATION CARD(S)

A. Install a photoengraved or etched aluminum information card (for exterior display) at location to be determined by Consultant/Engineer. Information listed on the Information Card is located at the end of this section.

B. A card shall be provided for each differing assembly and be a minimum size of 8-1/2 by 11 inches.

C. Secure with removable stainless steel screws at approved location.

D. A hard copy of each card is required in the Close-Out Documents.

END OF SECTION 07 55 03
## MODIFIED BITUMEN SHEET ROOFING SYSTEM INFORMATION CARD

1. **Contract Number:**

2. **Building Number and Location:**

3. **Project Specification Number:**

4. **Deck:**
   - **Type:**
   - **Slope:**

5. **Insulation:**
   - **Type:**
   - **Thickness:**
   - **Manufacturer:**

6. **Overlay or Coverboard**
   - **Type:**
   - **Thickness:**
   - **Size:**
   - **Manufacturer:**

7. **Vapor Retarder:**
   - **[ ] Yes [ ] No**
   - **Type:**

8. **Base Sheet Application:**
   - **Type:**
   - **Weight:**
   - **Method:** (torched / mopped / hand / or machine-nailed)
   - **Manufacturer (Name / Address / Phone No.):**

9. **Cap Sheet Application:**
   - **Type:**
   - **Weight:**
   - **Method:** (torched / mopped / hand / or machine-nailed)
   - **Manufacturer (Name / Address / Phone No.):**

10. **Adhesive:**
    - **Type:**
    - **Quantity/Square:**
    - **Manufacturer:**

11. **Flashing Sheets:**
    - **Type:**
    - **Weight or Gauge:**
    - **Manufacturer:**

12. **Modular Tray or Paver Pedestal**
    - **Product:**
    - **Manufacturer:**

13. **Statement of Compliance or Exceptions:**

14. **Date Roof Completed:**

15. **Warranty Period:**

16. **Roofing Contractor (Name / Address / Phone No.):**

17. **Prime Contractor (Name / Address / Phone No.):**

18. **Contractor's Signature:**

19. **Date:**
MODIFIED BITUMEN SHEET ROOFING SYSTEM CONTRACTOR WARRANTY

WHEREAS, _________________________________ of ___________________________, Telephone: ________________________________ herein called the "Roofing Contractor", has performed roofing work on the following project:

Owner: _________________________________

Address: _________________________________

, Telephone: ________________________________

Name and Type of Building: _________________________________

Address: _________________________________

Area of Work: _________________________________

Date of Acceptance: ________________________________

Guarantee Period: Three Years Date of Expiration: ________________________________

AND WHEREAS, the Roofing Contractor has contracted to warrant said work against leaks and faulty or defective materials and workmanship for the designated Guarantee Period; NOW, THEREFORE, the Roofing Contractor hereby warrants, subject to the terms and conditions herein set forth, that during the Warranty Period he will at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work, and as are necessary to maintain said work in watertight condition.

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

1. Warranty covers only repairs made by contractor to said roof under this contract and does not cover work by others or future defects not directly attributable to work performed.

2. Specifically excluded from this Warranty are damages to the work, other parts of the building and building contents caused by: a) lightning, windstorm, hailstorm, and other unusual phenomena of the elements; b) fire; c) failure of the roofing system substrate including cracking, but excluding hairline cracking, settlement, excessive deflection, deterioration, and decomposition; d) faulty construction of parapet walls, copings, vents, equipment supports, and other edge conditions and penetrations not included in the project; e) repeated vapor condensation on the bottom of roofing; and f) activity on the roofing by others including construction contractors, maintenance personnel, other persons, and animals whether authorized or unauthorized by Owner. When the work has been damaged by any of the foregoing causes, the Warranty shall be null and void until such damage has been repaired by the Owner or by another responsible party so designated.

3. The Roofing Contractor is responsible for damages to work covered by this Warranty.

4. During the Warranty Period, if the Owner allows alteration of the work by anyone other than the Roofing Contractor, including cutting, patching and maintenance in connection with penetrations, attachment of other work, and positioning of anything on the roof, this Warranty shall become null and void upon the date of said alterations, but only to extent said alterations affect work covered by this Warranty. If the Owner engages the Roofing Contractor to perform said alterations, the Warranty shall not become null and void, unless the Roofing Contractor, prior to proceeding with said work, shall have notified Owner in writing, showing reasonable cause for claim that said alterations would likely damage or deteriorate the work, thereby reasonably justifying a termination of this Warranty.
5. During the Warranty Period, if the original use of the roof is changed and it becomes used for, but was not originally specified for other use or service more severe than originally specified, this Warranty shall become null and void upon the date of the said change, but only to the extent said change affects work covered by this Warranty.

6. The Owner shall promptly notify the Roofing Contractor of observed, known or suspected leaks, defects or deterioration, and shall afford reasonable opportunity for Roofing Contractor to inspect the work, and to examine the evidence of such leaks, defects or deterioration.

7. Contractor will promptly inspect reported leaks and if found to be attributed to work performed, make the required repairs.
   
a. If leaks are found to be from other sources, contractor shall so inform owner and make the needed repairs. There will be no charge for this service call.

b. Future service calls and leak repairs not attributed to contractors work will be for Owner's account. Cost of repairs will be at a fair and reasonable rate. Materials required will be at cost plus 15%.

8. This Warranty is recognized to be the only warranty of Roofing Contractor on said work, and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to him in cases of Roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Contractor of his responsibility for performance of the original work, regardless of whether Contract was a contract directly with Owner, or a subcontract with Owner's General Contractor.

IN WITNESS WHEREOF, this instrument has been duly executed this _________ day of ___________________, 20______.

Roofing Contractor's Signature:                                                                                           

Typed Name:                                                                                                             

As Its (position):                                                                                                       

Date:                                                                                                                     


SECTION 07 60 03 - SHEET METAL FOR BUILDING ENVELOPE AND FENCING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes all sheet metal items and accessories specified or as required to complete the work. Applicable edge metal systems shall adhere to the general requirements of ANSI/SPRI ES-1, 2003, in accordance with the IBC 2012.

B. This section includes all sheet metal items and accessories specified or as required to provide closures, counterflashings and cap flashings for penetrations and terminations thru exterior wall assemblies.

C. All treated / waterproof carpentry shall have waterproof underlayment to provide separation with sheet metal.

D. General Requirements:
   1. All sheet metal components shall have a positive slope, a continuous waterproof underlayment with hemmed edges locked onto continuous cleats.
   2. Sheet metal laps shall be a minimum of 4 inches with 2 strips of butyl tape within the lap.
   3. Sheet metals extending into wall assemblies shall have side and end dams with a complete waterproof seal to the adjoining surface and watershedding transition details.
   4. Provide sill flashings for all fenestrations and other wall openings.
   5. Provide sheet metal flashings/closures for all wall penetrations.

E. New clamping rings, stainless steel bolts and metal strainers are required on all roof drains.

F. Also includes fencing requirements.

G. A set quantity is required for roof drains. This quantity is to be included in the Base Bid as listed on the Unit Prices Attachment. Any quantity above or below the set quantity amount shall result in an add or deduct to the Contract Sum based on the unit price provided.

1.2 RELATED REQUIREMENTS

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

B. Section 02 04 03: Cutting and Patching for Building Envelope

C. Section 02 05 03: Demolition and Removal for Building Envelope

D. Section 02 82 03: Engineering Control of Asbestos Containing Material

E. Section 03 90 03: Concrete Restoration for Top Deck

F. Section 04 50 03: Select Masonry Replacement Restoration and Cleaning

G. Section 06 10 03: Rough Carpentry for Roofing

H. Section 07 14 03: Concrete Deck Coating for Vehicular Traffic

I. Section 07 55 03: Modified Bitumen Sheet Roofing System

J. Section 07 91 03: Prefabricated Parking Garage Joints

K. Section 07 92 03: Sealants for Building Envelope

L. Section 08 81 03: Fenestration Replacement
1.3 REFERENCES

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

B. ALUMINUM ASSOCIATION, INC. (AA):

C. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
   2. ANSI/ASME A112.6.4 (2008) Roof, Deck and Balcony Drains

D. AMERICAN WELDING SOCIETY (AWS):

E. ASTM INTERNATIONAL (ASTM):
   5. ASTM A 924 / A 924M (2006) Steel Sheet, Metallic-Coated by the Hot-Dip Process


F. COPPER DEVELOPMENT ASSOCIATION, INC (CDA):

G. FACTORY MUTUAL (FM):
   1. FM DS 1-49 (Latest Edition) Perimeter Flashing

H. INTERNATIONAL CODE COUNCIL (ICC):

I. NATIONAL ROOFING CONTRACTOR’S ASSOCIATION (NRCA):

J. SHEET METAL & AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA):

K. REVERE COPPER PRODUCTS, INC.:
   1. Copper and Common Sense, Eighth Edition

1.4 SUBMITTALS

A. Submit the following in accordance with Division 01, Submittals.

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

C. Drawings:
   1. Details shall be in strict accordance with the drawings provided.
   3. Contractor shall provide shop drawings with the following information for all new sheet metal flashings and components:
      a. Type and gage of metal, configuration, dimensions, fastening and anchoring methods to include type fastener and frequency of attachment, provisions for expansion and contraction flashing closures and trim.
b. Any deviation/variation requested due to manufacturers requirements must be submitted in writing for approval.

c. Any items of concern should be brought up at the Pre-Construction Conference.

D. Samples:

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

E. Color Samples of Kynar 500 (Hylar 5000) finishes from manufacturer standard color selections. A minimum of twelve (12) color selections shall be provided. Color samples shall reasonably match existing materials to be replaced.

F. Drains and Accessories

1. Existing Drains
   a. New Clamping rings, stainless steel bolts and metal strainers.

G. Safety Data Sheets (SDS): Submit Safety Data Sheets with each specification section and include with Safety Plan.

1.5 CONFORMANCE AND COMPATIBILITY

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

B. Coordinate sheet metal and attachment with wood treatment of rough carpentry in accordance with Section 06 10 03, Rough Carpentry for Roofing.

1.6 DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Package and protect materials during shipment.

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

B. Storage:

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

2. Materials shall be stored, handled, and installed in a manner to protect them from all damage during the entire construction period.

3. Immediately remove damaged materials from the job site and replace with new material.

C. Handling:

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

A. The contractor will notify the Consultant/Engineer immediately of any unforeseen site condition.

B. The contractor will be required to secure the areas and dry-in the roofing system at no cost to the Owner until the problem is resolved.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Shall conform to the respective reference specifications and other requirements specified herein.

B. Edge metal systems shall adhere to the general requirements of ANSI/SPRI ES-1, 2003.

C. Sheet Metal:

1. Furnish sheet metal items in 8 to 10 foot lengths.

2. Vertical face of sheet metal components shall be a minimum of 4 inches unless otherwise indicated or approved.

3. Single pieces less than 8 feet may be used to connect shop fabricated inside and outside corners and at end runs.

4. Provide accessories and other items essential to complete the sheet metal installation.
   a. These accessories shall be made of the same material as the items to which they are applied.

5. Fabricate sheet metal items of the materials specified and to the gage, thickness, or weight as specified, unless required by SMACNA to be heavier gage or size.

6. Finish:
   a. Provide Kynar 500 (Hylar 5000) finish for all exposed sheet metal items unless otherwise indicated. Color shall be as selected by Owner.
   b. Concealed items may be mill finish, except as noted below.

7. Exterior vertical face of sheet metal components shall extend a minimum of 1 1/2-inch below blocking.

2.2 TYPES AND GAGES OF METALS

A. Steel Sheet, Galvalume AZ55, gage as specified for specific components below:

1. 24 gage (counterflashings, edge metals, wall panels, and copings for parapet walls up to 18” wide)

2. 22 gage (copings for parapet walls up to 24” wide)
B. Aluminum Sheet ASTM B 209, thickness as specified for specific components below:
   1. 0.040 inches (counterflashings, edge metals, walls panels, and copings for parapet walls up to 18” wide)
   2. 0.050 inches (copings for parapet walls up to 24” wide)

C. Lead (for boots / drains):
   1. Grade B, minimum weight 4 lbs per square foot.

D. Stainless Steel (for pitchpans / penetrations):
   1. ASTM A 167, Series 302 or 304, 22 gage and soldered.

E. Cleats:
   1. 1 gage/thickness heavier than metal attached; 22 gage maximum for galvalume cleats, 0.050 inches maximum for aluminum cleats.

F. Use the same metal or a metal compatible with the item fastened when connecting to existing metal.

G. Gutter Material Gage / Thickness:
   1. The sheet metal gage/ thickness for gutter metal shall be as described below in direct relation to each gutter’s girth/ width of unformed metal stock.
      a. 20-inch and less; 24 gage galvanized (Galvalume) or 0.040-inch Aluminum
      b. 21-inch to 25-inch; 22 gage galvanized (Galvalume) or 0.050-inch Aluminum
      c. 26-inch to 30-inch; 20 gage galvanized (Galvalume) or 0.063-inch Aluminum

2.3 OTHER MATERIALS

A. Asphalt Roof Cement: ASTM D 4586 / D 4586 M, Type II.

B. Asphalt Primer: ASTM D 41 / D 41 M.

C. Fasteners:
   1. Fasteners shall be compatible with the materials being fastened and shall provide for secure, firm attachment.
   2. Exposed fasteners shall have domed head with integral metal washer and rubber gasket.
   3. Fasteners shall be hot dipped galvanized steel, stainless steel, bronze or copper as a minimum.
   4. Do not use impact-driven fasteners. Use pre-drilled, screw-type fasteners.
   5. Only stainless steel fasteners shall be used to connect dissimilar metals.

D. Membrane Liner and Waterproof Underlayment:
   2. Ensure product is compatible with roof membrane and membrane adhesives.
E. Breathable Underlayment:
   1. A #30 felt or approved equal.

F. Butyl Tape:
   1. Double-sided butyl tape of width as required.

G. Aluminum Termination Bar:
   1. One (1) inch x 1/8 inch thick with slotted holes a minimum of 6 inches on center.

H. Metal Wall Liner Panels (Options):
   1. Pre-finished, corrugated metal wall panels, minimum 24 gage, meeting metal criteria of this section.
   2. Pre-finished, interlocking metal wall panels with hidden clips meeting metal criteria of this section.

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

PART 3 - EXECUTION

3.1 INSTALLATION

A. Requirements:
   1. Provide new metal for all work unless otherwise indicated.
   2. Make surfaces to receive sheet metal plumb and true, clean, even, smooth, dry and free of defects and projections, which might affect application.
   4. Provide sheet metal flashing in angles formed where roof decks abut walls, curbs, ventilators, pipes, or other vertical surfaces and wherever indicated and necessary to make the work watertight.
   5. Join sheet metal together as indicated.
   6. Increase attachment of all components by 100% at corner locations as defined by ASCE-7.
   7. All materials indicated to be reused shall be removed without damage and stored for protection until required.
8. Where existing components to be reused do not provide for minimum 4 inch vertical flashing face, install flashing skirt of compatible materials and attach securely in a watertight and water shedding manner.

9. Provide pre-fabricated inside and outside corners at all sheet metal intersection pieces.

10. Sheet metal shall be fabricated to conform to the contours of surfaces to which applied.

11. All sheet metal to have waterproof membrane underlayment installed behind or below the metal components. Waterproof underlayment shall have minimum 4 inch laps and sealed at all terminations and penetrations.

12. Provide conforming sheet metal closures at all flashing termination conditions.

13. Provide accessories and fastenings as required to provide a securely attached, watertight construction.

14. Where sheet metal components are to be embedded in the roofing system, prime both sides of all metal flanges prior to installation.

B. Workmanship:

1. Make lines, arises and angles sharp and true.

2. Free exposed surfaces from visible wave, warp and buckle and tool marks.

3. Fold back exposed edges neatly to form a 1/2-inch hem on concealed side.

4. Make sheet metal exposed to the weather watertight with provisions for expansion and contraction.

C. Nailing:

1. Confine nailing of sheet metal generally to sheet metal only where noted or specified.

2. Confine nailing of flashing to one edge only.

3. Space nails 4 inches on center and staggered or as otherwise indicated.

4. Face nailing will not be permitted.

5. Nailer are specified in Section 06 10 03, Rough Carpentry for Roofing.

D. Continuous Cleats:

1. Provide continuous cleats where indicated or specified.

2. Cleats shall be of the same material as material being attached and one gage/increment thicker.

3. Form with integral drip to engage sheet metal to be attached.

4. Attach securely at maximum 6 inches on center, increased to 3 inches on center at corners as defined by ASCE-7.

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

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

G. Seams:
   1. Lap Seams:
      a. Overlap seams of flashing not less than 4 inches, or as otherwise indicated.
      b. Completely and neatly fill the joints with two strips of 1/8 inch by 1/2-inch partially cured butyl tape or butyl sealant in an approved manner.
   2. Standing Seams:
      a. Not less than 1 inch high, single-lock with sealant.
      b. Coped side lap with two beads of butyl sealant for coping and cap flashing sheet metal.
      c. Coping: As indicated on the drawings.
   3. Cover Plates:
      a. Edge Metal: A minimum 6 inches wide, and one-half inch longer than edge metal. Set in 1/16-inch thick bed of roof cement, two nails in center, and one at each corner.
   4. Soldering:
      a. Soldering is required and shall be done in accordance with SMACNA criteria for all metals that can be soldered.

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

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

3.2 SPECIFIC COMPONENTS

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

B. Reglets:
   1. Care should be taken not to damage existing reglet/counterflashing when cutting counterflashing and installing new materials.
   2. All damaged sheet metal or missing metal, or material damaged during removal, which would restrict watertight application or provide unsightly appearance as determined by the Consultant/Engineer shall be replaced, at no cost, with new, matching materials.
   3. After completion of all base and counterflashing work, the sealant of all reglets shall be completely removed, the area cleaned, and new sealant installed as specified in Section 07 92 03, Sealants for Building Envelope.
   4. Any damaged reglet or counterflashing shall be repaired to match existing.
5. New reglets shall be cut 1-1/4 inch deep.

6. Sheet metal shall be fabricated with friction cleat and supplemented with lead wedge anchorage.

C. Copings:
   1. Provide sheet metal coping as indicated and with termination closure flashing.

   2. Edge metals/closures/copings shall have waterproof underlayment installed under coping and turned down minimum 3 inches each side of wall, and extend over wall assembly a minimum of 1 1/2 inches.

   3. Coping shall have continuous firm support using non hygroscopic materials sloped to promote positive drainage.

   4. Continuous cleats, one gage/increment thicker than metal coping, shall be installed on interior and exterior sides.

   5. Sheet metal coping shall be attached with continuous cleats on outer face and screw fastening at maximum 12 inches on center on inner face, unless otherwise indicated or approved.

   6. Joints methods shall be as indicated on drawings.

   7. All inside and outside corners shall be pre-fabricated with 12-inch legs in each direction measured from inside corner.

D. Cap Flashing
   1. Install cap flashing curbing as indicated.

   2. Provide continuous, firm support sloped using non hydroscopic materials to promote positive drainage.

   3. Install waterproof underlayment over top of support construction and turn down vertical faces and up adjoining wall construction 3 inches, minimum.

   4. Seal seams and laps in membrane liner.

   5. Install sheet metal cap flashing with joints as indicated.

   6. Terminate with prefabricated sheet metal closures.

   7. Attach cap flashing as indicated with continuous cleats and screw fastening.

E. Embedded Edge Metal
   1. Prefabricate in the shapes indicated.

   2. Extend flange at least 4 inches on to roofing.

   3. Provide a minimum 4 inch vertical face and extend a minimum 1 ½ inch over wall assembly.

   4. At gutter locations, provide a minimum 4-inch vertical face, notched at each spacer, with a minimum 3-inch lap over gutter.
5. Joints methods shall be as indicated on drawings.

6. Prime bottom side of flange with primer and allow to dry.

7. Set primed flange in full bed of mastic/sealant on roof membrane and nail securely to wood nailer with appropriate fasteners a minimum of 1.5 inches long spaced not more than 4 inches on center and staggered.

8. Six (6) wide cover plate with hemmed edges set in two strips sealant/tape on each side of joint.

9. Provide polymer clad metal for welded membrane application.

F. Flashing at Roof Penetrations and Equipment Supports

1. Provide metal flashing for all pipes, ducts and conduits projecting through the roof surface and any equipment supports.

2. No pitch pans/pockets are to be used unless specifically detailed and indicated including a sheet metal umbrella.

3. Single Pipe Vents
   a. Set primed flange of sleeve in a full bed of mastic/sealant and nail 4 inches on centers.
   b. Bend the top of the sleeve down into the vent pipe a minimum of 1 inch.
   c. Provide strip flashing of metal flange as specified and indicated.

G. Metal Wall Liner Panels:

1. Provide a minimum breathable weather resistant barrier / underlayment in watershedding fashion behind panels.

2. Provide treated wood or metal furring as indicated or necessary to accomplish specified work. Fasten furring to wall with appropriate fasteners.

3. Provide and install wall panels.
   a. Provide a bottom panel flashing shall be fabricated in a 2-piece condition to receive sheet metal counterflashing and shall be attached to wall with fasteners 12-inches on center.
   b. Weather resistant barrier/underlayment and the metal panels are to extend over the vertical leg of the bottom panel flashing a minimum of 3-inches.
   c. Terminate the metal wall panels approximately 1-inch above the bottom panel flashing/counterflashing receiver.
   d. Provide and install wall panels using rubber gasket type stainless steel fasteners at top and bottom a maximum of 12-inches on center in between. Intermediate rows of fasteners should be spaced no more than 2 feet on center.
   e. Metal coping/edge metal/counterflashing system to extend over top of metal wall panels a minimum 4-inches.
H. Roof Drain Flashing:

1. "No Hub" connectors are not permitted. Contractor is required to re-seal new drain assembly using lead method for cast iron drain pipes.

2. Temporarily plug drain when working in drain area. Remove debris from drain area prior to unplugging.
   a. Remove plug from drain at the end of each day’s construction or when inclement weather threatens.

3. Provide primed 30 inch metal sheet flashing indicated.

4. Ensure insulation tapers up from drain to a minimum 24 inches out at a minimum 1/4”/12” and a maximum of 1”/12”. Provide tapered filler to match field insulation thicknesses.

5. Coat primed drain bowl flange with mastic/sealant.

6. Run roof membrane over drain bowl flange.

7. Set primed lead flashing sheet centered over roof drain in mastic/sealant over membrane plies.

8. Strip in metal flashing sheet with membrane flashing system as indicated.

9. Clamp the roof membrane, metal flashing sheet and strip flashing under the drain clamping ring.

10. Secure clamping ring so that membrane and flashing are free of wrinkles and folds.

11. Clean drain line at completion of work.

12. Flood test each drain to ensure watertight condition.

I. Pitch Pans/Pitch Pockets

1. Pitch pans shall only be used in work where indicated on the drawings or approved by the Consultant/Engineer.

2. Existing pitch pan/pitch pockets shall be removed.

3. Mechanical/electrical/roof penetrations shall be disconnected and raised as required to provide proper flashing.

4. Pitch pan shall be fabricated from 20-ounce copper or 22-gage Series 302/304 stainless steel with all joints soldered or welded. A minimum 4-inch flange and 4 inch vertical height is required with one inch hemmed edge around top of entire pitch pan.

5. Bottom of pitch pan at deck shall be lined to permit pitch pan base to be filled with non-shrink grout. Prime inside of pitch pan before filling. The remaining portions of the pan shall be filled with pourable sealer adhered to walls of pan and penetration. Sealer shall be tapered to promote drainage.

6. A sheet metal umbrella or collar shall be fabricated to fit over the pitch pan and be sealed at penetration connection.
J. Scupper/Overflow Scupper:
1. Prefabricate scupper sleeve from minimum 16-ounce copper or 24 gage series 302/304 stainless steel.
2. Fabricate to ensure any seams in pan are positioned in top of scupper pan.
3. Solder all seams watertight.
4. Prime both sides of flanges prior to installation.
5. Set flanges in bed of roof cement.
6. Fasten and strip flash.
8. Exterior Flashing/Collar
   a. Fabricate collar from same metal as coping.
   b. Provide 1/2-inch hemmed edge on all 4 sides.
   c. Set collar in 2 strips of adhesive or butyl tape on all sides.
   d. Secure in place with stainless steel fasteners.
   e. Provide counterflashing above.

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

3.3 BASE FLASHING SECUREMENT
A. Where a nailable substrate does not exist for the securement of the base flashing, provide a 24 gage, galvalume sheet metal securement strip to the wall at all base flashing locations.

3.4 UNIT PRICED QUANTITIES
A. Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.
B. Contractor shall notify Owner in writing when 80% of quantity is used for each unit price item.
C. Provide photograph or videotape documentation of repairs.
D. Locate quantities and show their locations on the applicable drawings.
E. Provide actual used quantities on each Application for Payment request.

END OF SECTION 07 60 03
SECTION 07 91 03 – PREFABRICATED PARKING GARAGE JOINTS

PART 1 - GENERAL

1.1 SUMMARY

A. Base Bid includes replacement of all terminations of the existing pre-formed traffic bearing deck expansion joints at the top deck of the parking garage. All associated accessories are to be included as required to complete work.

B. This section also includes the application of a two-part polyurethane elastomeric nosing for concrete surfaces in areas indicted and the installation of prefabricated expanded foam infused silicone bellows to complete work.

C. Work also includes the following:

1. At specific locations, remove the traffic cover plate, remove the prefabricated metal expansion join from concrete, provide new prefabricated expansion joint and reinstall the traffic cover place.

2. Work also includes leveling existing concrete to ensure traffic cover place fits flush and level to concrete surfaces.

1.2 RELATED REQUIREMENTS

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

B. Section 02 04 03: Cutting and Patching for Building Envelope

C. Section 02 05 03: Demolition and Removal for Building Envelope

D. Section 02 82 03: Engineering Control of Asbestos Containing Material

E. Section 03 90 03: Concrete Restoration for Top Deck

F. Section 04 50 03: Select Masonry Replacement Restoration and Cleaning

G. Section 06 10 03: Rough Carpentry for Roofing

H. Section 07 14 03: Concrete Deck Coating for Vehicular Traffic

I. Section 07 55 03: Modified Bitumen Sheet Roofing System

J. Section 07 60 03: Sheet Metal for Building Envelope and Fencing

K. Section 07 92 03: Sealants for Building Envelope

L. Section 08 81 03: Fenestration Replacement

1.3 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced, and to provide any clarifications for issues not covered within this specification.
B. ASTM INTERNATIONAL (ASTM):


C. INTERNATIONAL CODE COUNCIL (IBC):


1.4 SUBMITTALS

A. Submit the following in accordance with Division 01, Submittals.

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

C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.

D. Product Data: Provide data for material description, physical properties, recommended storage conditions, shelf life, precautions, flexible flashings, joint cover sheet, and joint and crack sealants, with temperature range for application of products.

E. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

F. Applicator: Provide documentation for the following:

1. Company specializing in performing the work of this section and approved by the manufacturer.
2. The contractor shall have completed three projects of a similar size and nature in the last three years.

1.5 PRE-INSTALLATION CONFERENCE

A. Prior to starting application of the expansion joint system, arrange and attend a pre-installation conference to ensure a clear understanding of drawings and specifications. Give the Consultant/Engineer 7 days advance written notice of the time and place of the meeting. Ensure that the mechanical and electrical subcontractor, flashing and sheet metal subcontractor, and other trades that may perform other types of work on or over the expansion joints after installation, attend this conference.
1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's unopened and undamaged containers bearing the following information:

1. Name of manufacturer.
2. Name of contents and products code.
4. Lot or batch number.
5. Storage temperature limits.
6. Shelf life expiration date.
7. Mixing instructions and proportions of contents.
8. Safety information and instructions.
9. Store and protect materials from damage and weather in accordance with manufacturer's instructions.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not apply if temperature of substrate is 45 degrees F or if ambient temperatures are expected to fall below 40 degrees F or if rain is expected before the application has time to cure.

1.8 WARRANTY

A. Furnish the Three-Year Contractor Warranty as provided at the end of this section. The warranty period shall be not less than 3 years from the date of substantial completion.

1. If the Contractor fails to perform repairs within 72 hours of written notification, the warranty will not be voided because of work being performed by others to repair deficiencies/failures regardless of manufacturer’s warranty to the contrary.

PART 2 - PRODUCTS

2.1 TRAFFIC BEARING PREFABRICATED DECK EXPANSION JOINTS

A. Traffic bearing deck expansion joints shall match existing type, width and profile as required to nest within the profile of the existing expansion joints.

B. Expansion Joint Gland Material: Heat weldable (Santoprene), thermoplastic rubber, double-celled extrusion with perforated edges.

1. Tensile Strength: Minimum 850 psi
2. Elongation @ Break: Minimum 300%
3. Hardness, Shore A: 67+ 3
4. 100% Modulus: Minimum 275 psi
5. Tear Strength: 140 lbs/in
6. Ozone Resistance: No Cracks
C. Nosing Material: Two part polyurethane reinforced with aggregate, fast curing, resistant to ozone, UV, deicing chemicals and abrasives.

1. Binder
   a. Tensile Strength: Minimum 750 psi
   b. Elongation @ Break: Minimum 200%
   c. Hardness, Shore D: Maximum 50
   d. Tear Resistance: Minimum 80 lbs/in
   e. Water Absorption: Maximum 3%
   f. Heat Shrinkage: Maximum 1.6%

2. Binder and Aggregate
   a. Compressive Strength: Minimum 2,200 psi
   b. Impact Resistance @ 20 Degrees F: No cracks
   c. Resilience, 5% Deflection: Minimum 90%

D. Bellows for Vertical Expansion Joints: Pre-compressed, UV stable, factory formed, silicone coated, polyurethane foam impregnated with a hydrophobic polymer.

E. Termination and Transition Pieces: Expansion joint gland material factory fabricated and welded to provide a watertight detail.

F. Contractor is to provide new prefabricated expansion joints, which adheres to this scope of work, and is installed in accordance with the manufacturer's printed instructions. Catalog data describing the specific system intended to be used, and application procedures; is required.

2.2 ACCESSORIES

A. Surface Primer: Manufacturers, recommended primer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify substrate surfaces are durable; free of frozen matter, dampness, loose particles, cracks, pits, projections, or foreign matter detrimental to adhesion or application of the traffic bearing deck expansion joint components.

B. Verify that substrate surfaces are smooth, and not detrimental to full contact bond of traffic bearing deck expansion joint components.

3.2 PREPARATION

A. Care shall be taken during the preparation and application process.

   1. Contractor is responsible for any and all damages that result from the removal, preparation and application process.
2. This applies to this property, its occupants and all surrounding properties.

3. Protect adjacent surfaces not designated to receive repairs.

B. Surface must be free of all contaminants and cleaned of all dirt, loose excess concrete or foreign materials.

1. Contamination of the substrate must be minimized to acceptable levels for proper application of primer and traffic bearing deck expansion joint components.

2. Blockouts to receive traffic bearing deck expansion joint components are to be uniform and to the minimum depths and widths as recommended by the manufacturer.

3. The manufacturer shall inspect and approve the substrate receiving the traffic bearing deck expansion joint components in areas of repairs prior to traffic bearing deck expansion joint work being performed.

3.3 SPECIAL PRECAUTIONS

A. Protect materials during transport and application. Do not dilute primers and other materials, unless specifically recommended by materials manufacturer. Keep containers closed except when removing contents. Do not mix with remains of unlike materials. Thoroughly remove residual materials before using application equipment for mixing and transporting materials. Do not permit equipment on the project site that has residue of materials used on previous projects. Use cleaners only for cleaning, not for thinning primers or other materials.

3.4 APPLICATION

A. After all substrate repairs have been completed and primer has been applied, installation of traffic bearing deck expansion joint components can proceed.

B. Install all materials in accordance with the manufacturer's instructions.

C. Provide prefabricated, factory welded transition and termination pieces fabric reinforcing at all terminations, angles or directional changes.

D. All field fabricated splices are to be heat welded unless specifically noted otherwise.

3.5 FIELD QUALITY CONTROL

A. Moisture Test - Prior to application of traffic bearing deck expansion joint components, measure moisture content of substrate with a moisture meter in the presence of the Consultant/Engineer. An acceptable device is the Delmhorst Moisture Meter, Model BD7/2D/CS, and Type 21E. Similar meters by other manufacturers, which are suitable for the purpose, may be used as approved by the Contracting Officer. Do not begin application until meter reading indicates “dry” range.

END OF SECTION 07 91 03
PREFORMED PARKING STRUCTURE EXPANSION JOINTS CONTRACTOR WARRANTY

WHEREAS, ____________________________ of ____________________________
(Address) ____________________________, Telephone: ____________________________, herein called the "Roofing Contractor", has performed roofing work on the following project:

Owner: ____________________________
Address: ____________________________

__________________________, Telephone: ____________________________

Name and Type of Building: ____________________________
Address: ____________________________

Area of Work: ____________________________
Date of Acceptance: ____________________________

Guarantee Period: Three Years Date of Expiration: ____________________________

AND WHEREAS, the Roofing Contractor has contracted to warrant said work against leaks and faulty or defective materials and workmanship for the designated Guarantee Period; NOW, THEREFORE, the Roofing Contractor hereby warrants, subject to the terms and conditions herein set forth, that during the Warranty Period he will at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work, and as are necessary to maintain said work in watertight condition.

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

1. Warranty covers only repairs made by contractor to said roof under this contract and does not cover work by others or future defects not directly attributable to work performed.

2. Specifically excluded from this Warranty are damages to the work, other parts of the building and building contents caused by: a) lightning, windstorm, hailstorm, and other unusual phenomena of the elements; b) fire c) failure of the roofing system substrate including cracking, but excluding hairline cracking, settlement, excessive deflection, deterioration, and decomposition; d) faulty construction of parapet walls, copings, vents, equipment supports, and other edge conditions and penetrations not included in the project; e) repeated vapor condensation on the bottom of roofing; and f) activity on the roofing by others including construction contractors, maintenance personnel, other persons, and animals whether authorized or unauthorized by Owner. When the work has been damaged by any of the foregoing causes, the Warranty shall be null and void until such damage has been repaired by the Owner or by another responsible party so designated.

3. The Roofing Contractor is responsible for damages to work covered by this Warranty.

4. During the Warranty Period, if the Owner allows alteration of the work by anyone other than the Roofing Contractor, including cutting, patching and maintenance in connection with penetrations, attachment of other work, and positioning of anything on the roof, this Warranty shall become null and void upon the date of said alterations, but only to extent said alterations affect work covered by this Warranty. If the Owner engages the Roofing Contractor to perform said alterations, the Warranty shall not become null and void, unless the Roofing Contractor, prior to proceeding with said work, shall have notified Owner in writing, showing reasonable cause for claim that said alterations would likely damage or deteriorate the work, thereby reasonably justifying a termination of this Warranty.
5. During the Warranty Period, if the original use of the roof is changed and it becomes used for, but was not originally specified for other use or service more severe than originally specified, this Warranty shall become null and void upon the date of the said change, but only to the extent said change affects work covered by this Warranty.

6. The Owner shall promptly notify the Roofing Contractor of observed, known or suspected leaks, defects or deterioration, and shall afford reasonable opportunity for Roofing Contractor to inspect the work, and to examine the evidence of such leaks, defects or deterioration.

7. Contractor will promptly inspect reported leaks and if found to be attributed to work performed, make the required repairs.
   a. If leaks are found to be from other sources, contractor shall so inform owner and make the needed repairs. There will be no charge for this service call.
   b. Future service calls and leak repairs not attributed to contractors work will be for Owner's account. Cost of repairs will be at a fair and reasonable rate. Materials required will be at cost plus 15%.

8. This Warranty is recognized to be the only warranty of Roofing Contractor on said work, and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to him in cases of Roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Contractor of his responsibility for performance of the original work, regardless of whether Contract was a contract directly with Owner, or a subcontract with Owner's General Contractor.

IN WITNESS WHEREOF, this instrument has been duly executed this ______ day of __________________, 20____.

Roofing Contractor's Signature:________________________________________________________

Typed Name:________________________________________________________________________

As Its (position):____________________________________________________________________

Date:______________________________________________________________________________
SECTION 07 92 03 - SEALANTS FOR BUILDING ENVELOPE

PART 1 - GENERAL

1.1 SUMMARY

A. Work in this section includes removal and replacement of all exterior sealant systems of building envelope for this project including:
   1. Wall Assemblies
   2. Wall Fenestrations
   3. Roofing and Sheet Metal
   4. Wet Seal of Windows and Storefront

B. General Guidelines:
   1. Joints shall not be less than 1/4-inch in width and not greater than 1 1/4-inch in width.
   2. Joint width shall be 4 times greater than anticipated movement.

1.2 RELATED REQUIREMENTS

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

B. Section 02 04 03: Cutting and Patching for Building Envelope

C. Section 02 05 03: Demolition and Removal for Building Envelope

D. Section 02 82 03: Engineering Control of Asbestos Containing Material

E. Section 03 90 03: Concrete Restoration for Top Deck

F. Section 04 50 03: Select Masonry Replacement Restoration and Cleaning

G. Section 06 10 03: Rough Carpentry for Roofing

H. Section 07 14 03: Concrete Deck Coating for Vehicular Traffic

I. Section 07 55 03: Modified Bitumen Sheet Roofing System

J. Section 07 60 03: Sheet Metal for Building Envelope and Fencing

K. Section 07 91 03: Prefabricated Parking Garage Joints

L. Section 08 81 03: Fenestration Replacement

1.3 REFERENCES

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

B. ASTM INTERNATIONAL (ASTM):


C. SEALANT WATERPROOFING RESTORATION INSTITUTE (SWRI):


2. Validation Program

1.4 SUBMITTALS

A. Submit the following in accordance with Division 01, Submittals.

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

C. Manufacturer's Catalog Data

1. Sealants

2. Tapes
   a. Butyl
   b. Preformed

3. Primers

4. Backstop materials

5. Data for the sealants shall include shelf life, recommended cleaning solvents, modulus and type cure.

D. Manufacturer's Standard Color Chart

1. Sealants:
   a. Submit color for each varying surface color.

E. Manufacturer's Instructions

1. Sealants/Tapes: Submit application instructions, precautions and mixing instructions for multi-component sealants.

F. Samples

1. Sealants: Submit one tube of each color for each sealant type to be used.
G. Sample Installations – Mock-Up:
   1. Finished Joint:
      a. Before sealant work is started, submit a sample of each type of finished joint where directed.
      b. Sample shall show the workmanship, bond and color of sealant.
      c. The workmanship, bond and color of sealant throughout the project shall match the approved sample joints.

H. Certificates of Compliance or SWRI Validation Program
   1. Sealants – Liquid Sealants
   2. Tapes – Pre-cured Silicone
   3. Tapes – Butyl
   4. Primers
   5. Bond breakers
   6. Backstops
   7. Submit certificates from the manufacturers attesting that materials meet the specified requirements and compatible for specified use. For liquid sealants and pre-cured sealants, SWRI Validation will be accepted.

I. Safety Data Sheets (SDS): Submit Safety Data Sheets with each specification section and include with Safety Plan.

1.5 ENVIRONMENTAL CONDITIONS
   A. The ambient temperature shall be within the limits of 40 and 100 degrees F when sealant is applied.
   B. Joint application should consider the expansion/contraction state of the joint at the time of application and during curing cycle.

1.6 DELIVERY AND STORAGE
   A. Delivery:
      1. Deliver materials to the job site in unopened in manufacturers' external shipping containers, with brand names, date of manufacture, color, and material designation clearly marked thereon.
      2. Elastomeric sealant containers shall be labeled to identify type, class, grade and use.
   B. Carefully handle and store materials to prevent inclusion of foreign materials or subjection to sustained temperatures exceeding 100 F degrees or less than 40 degrees F.
      1. Adhere to more stringent temperature restrictions of the Manufacturer as required for specific products.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide sealant that has been tested and suitable for each specific substrates to which it will be applied.

B. Exterior Sealant – A polyurethane based or silicone based product adhering to the below requirements shall be used.

   1. Modulus
      a. Low Modulus
         1) To be used for exterior insulation and finish systems, coatings and preformed silicone tape (pre-cured sealant) joints.
      b. Medium Modulus
         1) To be used for majority of building envelope joints.
      c. High Modulus
         1) To be used to wet seal glass.

   2. Grade – NS, a non-sag sealant shall be used.

   3. Type – A type S, single component, or type M, multi-component may be used.

   4. Locations and Colors
      a. Colors will be selected from standard color charts after mock-ups for each condition field of at least 3 choices is provided.

   5. Class
      a. A Class 50 shall be provided unless specifically approved or noted otherwise.

   6. Use
      a. Sealant use for each condition or application shall adhere to use classification of ASTM C 920.

C. Sealant Tapes:

   1. Butyl (for sheet metal laps)
      a. Provide a partially cured butyl tape, thickness 1/8 inch by a minimum of 1/2 inch wide.
      b. Locations shall be as follows:
         1) Lap joints of all metals.
         2) Beneath cover plates of cap and counterflashings.
         3) Where noted or specified elsewhere.
2. Preformed Tape System – Silicone Based:
   a. Provide a preformed tape system equal to Dow 123.
   b. Color shall match adjacent surfaces and be approved by Owner.
   c. Width and shape as indicated on drawings.

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

2.3 BOND BREAKERS
   A. Provide the type and consistency recommended by the sealant manufacturer for the particular application.
   B. Liquid applied bond breakers are not permitted.

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

2.5 CLEANING SOLVENTS
   A. Provide type recommended by the sealant manufacturer.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION
   A. Surfaces shall be clean, dry to the touch, and free from dirt, frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would tend to destroy or impair adhesion.
   B. When resealing an existing joint, completely remove the existing caulking/sealant and any foreign matter, dirt, dust or debris, prior to application of new sealant.
   C. Use compatible materials when existing silicone sealants exist.

3.2 SEALANT PREPARATION
   A. Prepare surfaces in strict accordance with the Contract Documents and any Manufacturers printed instructions.

3.3 APPLICATION OF SEALANTS
   A. Backstops:
      1. Install backstops dry and free of tears or holes.
2. Tightly pack the back or bottom of joint cavities with backstop material to provide a joint of the depth specified.

3. Install backstops in the following locations:
   a. Where indicated.
   b. Where backstop is not indicated but joint cavities exceed the acceptable maximum depths specified in paragraph entitled, "Joint Width to Depth Ratios".

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

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

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

3.4 APPLICATION OF BUTYL TAPES

A. Surfaces shall be cleaned and prepared as noted below.

B. No exposed applications of butyl tapes/sealants are permitted.

C. At each lap, provide 2 continuous applications of tape approximately 1 inch apart within the lap.

D. Directly after tapes are installed, set and secure metal.
3.5 APPLICATION OF PREFORMED (PRE-CURED SEALANTS) TAPES

A. Surfaces shall be cleaned and prepared as noted below.
B. Prime surfaces.
C. Mask (tape) exterior edge on each side of tape joint.
D. Provide even, uniform application of silicone-based sealant on each side of joint.
E. Directly after sealant is installed, install preformed silicone-based tape.
F. Remove tape and clean all surfaces.

3.6 PROTECTION AND CLEANING

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

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

3.7 UNIT PRICED QUANTITIES

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

END OF SECTION 07 92 03
SECTION 09 96 00 – HIGH PERFORMANCE COATINGS

PART ONE - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section. Provide all labor, materials, tools, scaffolding, site protection materials, paint and preparation, run-off remediation materials and all related work and materials in connection with surface preparation and applying protective coatings of structural steel framing and steel floor deck.

1.2 SUMMARY

A. This Section specifies the cleaning and repainting of the structural steel components that includes structural steel beams and columns and steel floor deck. Principal items include:

1. Existing structural steel members, including columns, beams and bracing that are noted on the plans and the general notes of the Project Drawings.

2. Existing corrugated steel floor deck where noted on the plans and the general notes of the Project Drawings.

B. Quantity Contingency

1. The amounts of structural steel and metal deck to be cleaned and painted given in the contract drawings are an approximation. A set quantity is required for metal deck replacement and metal deck repair. These quantities are to be included in the Base Bid as listed on the Unit Prices Attachment. Any quantity above or below the set quantity amount shall result in an add or deduct to the Contract Sum based on the unit price provided.

C. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 5 Section “Structural Steel” for new steel components.

1.3 REFERENCE STANDARDS

A. Without limiting the general aspects of other requirements of these specifications, all surface preparation, coating and painting of surfaces shall conform to the applicable requirements of the Steel Structures Painting Council, SSPC, NACE, CSP and the manufacturer's printed instructions.

B. The Owner’s decision shall be final as the interpretation and/or conflict between any of the referenced specifications and standards contained herein.

1.4 CONTRACTOR

A. The Contractor shall have five years practical experience and successful history in the application of specified products in similar projects. He shall substantiate this requirement by furnishing a list of references and job completions.
B. The Contractor shall possess the applicable license to perform the work as herein described and as specified by local, state and federal laws. The Contractor's South Carolina contractor's license number shall appear in the lower left-hand corner of the envelope containing the bids.

1.5 SUBMITTALS

A. The Contractor shall prepare and submit three (3) paint and protective coating samples of each finish, including all coats thereof, to the Owner for review. The samples shall be clearly marked with the manufacturer's name and product identification, and shall be submitted in sufficient time to allow for review, and, if necessary, resubmittal without causing any delay of the Project.

B. At the beginning of the Project, the Contractor shall prepare the surface, apply the epoxy primer and epoxy top coat to 8 square inches of structural steel and 8 square inches of metal floor deck that meets the requirements of this Project and of the Owner to be used as the standard for preparation of steel surfaces for the duration of this Project.

C. The Contractor shall provide three (3) copies of a coatings material list which indicates the manufacturer and paint number, with reference to the cleaning, priming and painting requirements of this Project, for approval of the Owner prior to, or at the time of, submittal of samples required herein.

D. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements, are suitable to be applied to the required substrates and that all of the cleaners and coatings are compatible.

1. Surface cleaner and de-greaser.
2. Epoxy primer.
3. Epoxy top coat.

The certificates shall contain technical data that includes but is not necessarily limited to intended use, make-up, recommended surface preparation and application conditions, material mixing and applications (including recommended dry mil thickness), precautions, safety, VOC content, maintenance and cleaning directions.

E. Closeout Submittals

1. Coating Maintenance Manual: Provide coating maintenance manual including product data pages, material safety data sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

2. Furnish extra materials from the same product run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.5 QUALITY ASSURANCE

A. General: Quality assurance procedures and practices shall be utilized to monitor all phases of surface preparation, application, and inspection throughout the duration of the Project. Procedures or practices not specifically defined herein may be utilized provided they meet recognized and accepted professional standards and are approved by the Owner. All materials selected for use under these specifications shall be delivered to the job site in their original containers and shall remain unopened until inspected and approved by the Owner.
B. Compatibility: Only compatible materials shall be used in the Work of this Project. Particular attention shall be paid to compatibility of primers and top coats. If necessary, subject to review by the Owner, a compatible barrier coat shall be applied between all existing coats and subsequent field coats to ensure compatibility.

C. Colors: All colors and shades of colors of all coats of paints and protective coating materials shall be as selected by the Owner. Each coat shall be of a slightly different shade, as directed by the Owner, to facilitate inspection of surface coverage of each coat.

D. Installer Qualifications: An experienced contractor who has completed structural steel repair work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

E. Surface preparation and painting standards shall be applied and reconciled with the requirements of the Work of this Project with the standards of the following organizations and documents:

1. American Institute of Steel Construction 2010 Code of Standard Practice for Steel Buildings and Bridges

2. The Society for Protective Coatings surface preparation and paint and coatings standards

In addition, all work shall be in compliance with the latest version of ANSI/AWWA D100-05 and D102-06, the International Building Code 2012 and in accordance with OSHA Safety and Health Standards.

F. Surface Preparation: Surface preparation will be based upon comparison with: "Pictorial Surface Preparation Standards for Painting Steel Surfaces", SSPC-Vis-1 and ASTM Designation D2200; "Standard Methods of Evaluating Degree of Rusting on Painted Steel Surfaces" SSPC-Vis-2 and ASTM Designation D610.

G. Application: No coating or paint shall be applied when the surrounding air temperature or the temperature of the surface to be coated is below the minimum required temperature for the specified product; to wet or damp surfaces or in fog or mist; when the temperature is less than 5 degrees F. above the dew point; when the air temperature is expected to drop below 40 degrees F; within six hours after application of coating. Dew point shall be measured by use of an instrument such as a Sling Psychrometer in conjunction with U.S. Department of Commerce Weather Bureau Psychrometric Tables. If above conditions are prevalent, coating or painting shall be delayed or postponed until conditions are favorable. The day's coating or painting shall be completed in time to permit the film sufficient drying time prior to damage by atmospheric conditions.

H. Thickness and Holiday Checking: Thickness of coatings and paint shall be checked with a non-destructive, magnetic type thickness gauge. The integrity of coated interior surfaces shall be tested with an approved inspection device. Non-destructive holiday detectors shall not exceed the voltage recommended by the manufacturer of the coating system. For thicknesses between 10 and 20 mils (250 microns and 500 microns), a non-sudsing type wetting agent, such as Kodak Photo-Flo, may be added to the water prior to wetting the detector sponge. All pinholes shall be marked, repaired in accordance with the manufacturer's printed recommendations, and retested. No pinholes or other irregularities will be permitted in the final coating.

I. Inspection Devices: The Contractor shall furnish, until final acceptance of coating and painting, inspection devices in good working condition for detection of holidays and measurement of dry-film thickness of coating and paint. The Contractor shall also furnish U.S. Department of
Commerce; National Bureau of Standard certified thickness calibration plates to test accuracy of dry film thickness gauges and certified instrumentation to test accuracy of holiday detectors.

J. All necessary testing equipment shall be made available for the Owner’s use at all times until final acceptance of application. Holiday detection devices shall be operated in the presence of the Owner.

1.6 DELIVERY, STORAGE, AND HANDLING

A. All coating and cleaning materials selected for use under these specifications shall be delivered to the job site in their original containers and shall remain unopened until inspected and approved by the Owner. All materials shall be stored in a dry safe place in accordance with the manufacturer’s printed instructions.

B. Paint and protective coatings shall be sealed in containers that plainly show the designated name, formula or specification number, batch number, batch date, color number, VOC content, Environmental handling requirements, surface preparation requirements, manufacturer’s directions and name of manufacturer, all of which shall be plainly legible at the time of use.

1.7 SAFETY AND HEALTH REQUIREMENTS

A. General: In accordance with requirements set forth by regulatory agencies applicable to the construction industry and manufacturer’s printed instructions and appropriate technical bulletins and manuals, the Contractor shall provide and require use of personnel protective lifesaving equipment for persons working on or about the Project site.

B. Head and Face Protection and Respiratory Devices: Equipment shall include protective helmets, which shall be worn by all persons while in the vicinity of the work. In addition, workers engaged in or near the work during sandblasting shall wear eye and face protection devices and air purifying halfmask or mouthpiece respirators with appropriate filters. Barrier creams shall be used on any exposed areas of skin.

C. Ventilation: Where ventilation is used to control hazardous exposure, all equipment shall be explosion-proof. Ventilation shall reduce the concentration of air contaminant to the degree a hazard does not exist. Air circulation and exhausting of solvent vapors shall be continued until coatings have fully cured.

D. Sound Levels: Whenever the occupational noise exposure exceeds maximum allowable sound levels, the Contractor shall provide and require the use of approved ear protective devices.

E. Illumination: Adequate illumination shall be provided while work is in progress, including explosion-proof lights and electrical equipment. Whenever required by the Owner, the Contractor shall provide additional illumination and necessary supports to cover all areas to be inspected. The Owner shall determine the level of illumination for inspection purposes.

F. Confined Space: When applicable it is mandatory that all work be performed in compliance with OSHA’S rules and regulations for working in confined space. Atmospheres within confined spaces as defined by the Occupational Safety and Health Administration are classified as being either a Class A, Class B or Class C environment.
PART TWO - PRODUCTS

2.1 COATING AND SURFACE PREPARATION MATERIALS

A. The term “coating materials” as used in these specifications, shall include all paints and primers regardless of use as a pretreatment, prime coat or finish coat.

B. All materials selected for use under these specifications shall be delivered to the job site in their original containers and shall remain unopened until inspected and approved by the Owner. The containers shall plainly show the designated name, manufacturer, manufacturer’s instructions, color, batch number and formula number for the Owner’s inspection, for the duration of storage and until the time of use. Materials exceeding storage life recommended by the manufacturer shall be rejected.

C. All coating materials shall be stored in enclosed structures to protect them from weather and excessive heat or cold. Flammable coating materials must be stored to conform to City, County, State and Federal safety codes for flammable coating or paint materials. At all times, coating materials shall be protected from freezing.

D. Coating Systems for Existing Metal Floor Deck

1. Surface Preparation: Power wash the surface to remove all loose paint, rust, dirt, scale and foreign matter. Devprep 88 by Devoe Coatings, or approved equal, shall be used prior to power washing to help remove all the existing dirt, grease, oil and all bond inhibiting substances. SSPC-SP11 Power Tool to Bare Metal Cleaning all rust and corrosion, and feather the edges.

2. Prime Coat: Prime all cleaned areas with Devran 203 by Devoe Coatings, or approved equal, @ 3.0 – 4.0 dry mils, with a minimum 12” overlap all around the area. The surface shall be clean, free of all dirt, grease, loose rust and dry before painting. Existing coatings should be tested for lifting prior to applying any new coatings. If they lift, they should be removed.

3. Top Coat: Apply an Epoxy top coat of Devran 224HS by Devoe Coatings, or approved equal, @ 4.0 – 8.0 dry mils, with a minimum 12” overlap all around the area.

4. Alternative Coatings: Alternative 1-coat polyamide epoxy coatings can be used in place of applying a separate primer epoxy and top coat epoxy as long as they meet the requirements of this project, are compatible with the cleaning agents and surface conditions and are approved by the owner and architect/engineer. Manufacturer’s instructions shall be followed regardless of the coating system chosen and should be reconciled with the requirements of this project, subject to review by Owner and Architect/Engineer.

E. Coating Systems for Existing Structural Steel

1. Surface Preparation: Power wash the surface to remove all loose paint, rust, dirt, scale and foreign matter. Devprep 88 by Devoe Coatings, or approved equal, shall be used prior to power washing to help remove all the existing dirt, grease, oil and all bond inhibiting substances. SSPC-SP11 Power Tool to Bare Metal Cleaning all rust and corrosion, and feather the edges.

2. Prime Coat: Prime all cleaned areas with Devran 203 by Devoe Coatings, or approved equal, @ 3.0 – 4.0 dry mils, with a minimum 12” overlap all around the area. The surface shall be
clean, free of all dirt, grease, loose rust and dry before painting. Existing coatings should be tested for lifting prior to applying any new coatings. If they lift, they should be removed.

3. Top Coat: Apply an Epoxy top coat of Devran 224HS by Devoe Coatings, or approved equal, @ 4.0 – 8.0 dry mils, with a minimum 12” overlap all around the area.

4. Alternative Coatings: Alternative 1-coat polyamide epoxy coatings can be used in place of applying a separate primer epoxy and top coat epoxy as long as they meet the requirements of this project, are compatible with the cleaning agents and surface conditions and are approved by the owner and architect/engineer. Manufacturer’s instructions shall be followed regardless of the coating system chosen and should be reconciled with the requirements of this project, subject to review by Owner and Architect/Engineer.

F. Responsibility of Hazards: Some paints and cleaning products are harmful to health. Handle all coating materials and cleaning products in accordance with the information on the manufacturer’s safety data sheet and in accordance with all federal and state regulations. Comply with all worker and public safety protection measures when cleaning requires removing paint containing lead or chromium. Monitor permissible exposure limits (PEL) in accordance with OSHA requirements.

PART THREE - EXECUTION

3.1 GENERAL

A. All surface preparation, coating, painting and other work shall conform to applicable standards of the Steel Structures Painting Council, AWWA, NACE ICRI, CSP, and any other appropriate standards as well as the manufacturer's printed instructions. Material applied prior to approval of the surface by the Owner shall be removed and reapplied to the satisfaction of the Owner at the expense of the Contractor.

B. All work shall be performed by skilled craftsmen qualified to perform the required work in a manner comparable with the best standards of practice. Continuity of personnel shall be maintained and transfers of key personnel shall be coordinated with the Owner.

C. Dust, dirt, oil, grease or any foreign matter that will affect the adhesion or durability of the finish must be removed by washing with clean rags dipped in an approved cleaning solvent and wiped dry with clean rags.

D. The Contractor's coating and painting equipment shall be designed for application of materials specified and shall be maintained in first class working condition. Compressors shall have suitable traps and filters to remove water and oils from the air. Contractor's equipment shall be subject to approval of the Owner.

E. Application of the first prime coat shall follow immediately after surface preparation and cleaning and before rust bloom or flash rusting occurs. Any cleaned areas not receiving first prime coat within this period shall be re-cleaned prior to application of first coat.

3.2 SURFACE PREPARATION

A. The latest revision of the following surface preparation specifications of the Steel Structures Painting Council and NACE shall form a part of this specification:
1. Solvent Cleaning (SSPC-SP1): Removal of oil, grease, soil and other contaminants by use of solvents, emulsions, cleaning compounds, steam cleaning or similar materials and methods which involve a solvent or cleaning action.

2. Hand Tool Cleaning (SSPC-SP2): Removal of loose rust, loose mill scale and other detrimental foreign matter to degree specified by hand chipping, scraping, sanding and wire brushing.

3. Power Tool Cleaning (SSPC-SP3): Removal of loose rust, loose mill scale, loose paint and other detrimental foreign matter to degree specified by power wire brushing or power sanders.

4. Power Tool Cleaning to Bare Metal (SSPC-SP11): Removal of loose rust, loose mill scale, loose paint and other detrimental foreign matter to produce a bare metal finish and to retain or produce a minimum 1.0 mil surface profile by power wire brushing or power sanders.

B. The Contractor shall take care while using power tools to clean members and connections, including but not necessarily limited to, those indicated on the project, as well as all members and connections of suspected or verified section loss.

C. The Contractor shall keep the area of his work and the surrounding environment in a clean condition. He shall not permit sanded materials and other waste matter to accumulate as to constitute a nuisance or hazard to the accomplishment of the work, the operation of the existing facilities, or nuisance to the surrounding environment.

3.4 APPLICATION, GENERAL

A. Coating and paint application shall conform to the requirements of the Steel Structures Painting Council Paint Application Specification SSPC-PA1, latest revision, for "Shop, Field and Maintenance Painting," and the manufacturer of the coating and paint materials.

B. Thinning shall be permitted only as recommended by the manufacturer approved by the Owner.

C. Each application of coating or paint shall be applied evenly, free of brush marks, sags, runs, with no evidence of poor workmanship. Care shall be exercised to avoid lapping on glass or hardware. Coatings and paints shall be sharply cut to lines. Finished surfaces shall be free from defects or blemishes.

D. Protective coverings or drop cloths shall be used to protect floors, fixtures, and equipment. Care shall be exercised to prevent coatings or paint from being splayed onto surfaces that are not to be coated or painted. Surfaces from which materials cannot be removed satisfactorily shall be recoated or repainted as required to produce a finish satisfactory to the Owner. The Contractor is responsible for any and all drips, spills, overspray or other surface that are painted.

E. When two coats of coating or paint are specified, where possible, the first coat shall contain sufficient approved color additive to act as an indicator of coverage or the two coats must be of contrasting color.

F. Film thickness per coat specified in Section 2.1 Paragraphs D and E are minimum required. If roller application is deemed necessary, the Contractor shall apply additional coats as to achieve the specified thickness.

G. All coating material shall be applied as in these specifications.
H. All welds, bolted connections, edges and other irregular surfaces shall receive a brush coat of the specified product prior to application of the first complete coat.

3.5 COATING SYSTEMS APPLICATION

A. After completion of surface preparation as specified for the specific system, coating materials shall be applied as noted in Section 2.1 Paragraphs D and E.

3.6 COLOR SCHEME

A. Colors: Submittals will be made to the Owner for approval prior to application.

3.7 VAPOR REMOVAL

A. Where appropriate all solvent, cleaning chemicals and coating vapors shall be completely removed by suction-type exhaust fans and blowers before placing in operating service.

3.8 CLEAN UP

A. Upon completion of the work, all staging, scaffolding, and containers shall be removed from the site or destroyed in a manner approved by the Owner. Coating or paint spots and oil or stains upon adjacent surfaces shall be removed and the jobsite cleaned. All damage to surfaces resulting from the work of this section shall be cleaned, repaired, or refinished to the satisfaction of the Owner at no cost to the Owner.

B. Upon completion of all Work of this Project, the Contractor shall touch up and restore damaged or defaced coated surfaces.

3.9 WARRANTY

A. The Contractor will warrant the work free of defects in material and workmanship for a period of one year from the acceptance of the work. At the end of one year, the Contractor will return for a one-year anniversary inspection of the work. The Contractor will correct any deficiencies found with no cost to the owner. Inspections shall be conducted in to conform to owners spec.

3.10 UNIT PRICE QUANTITIES

A. In accordance with Section 01 21 10, Unit Prices and Allowances, the Contractor shall maintain a log of all repair unit priced quantities used based on contract requirements.

B. Contractor shall notify Owner in writing when 80% of the quantity is used for each unit price item.

C. Provide photograph or videotape documentation of repairs.

D. Locate quantities and show their locations on the applicable drawings.

E. Provide actual use quantities on each Application for Payment request.
SECTION 32 17 23 - PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. The work shall include construction of pavement markings, stripes, symbols, and other indicated markings for traffic control and parking delineation onto concrete pavements as shown on the Drawings.

1.2 SYSTEM DESCRIPTION

All machines, tools and equipment used in the performance of the work shall be approved and maintained in satisfactory operating condition. Equipment operating on roads shall display low speed traffic markings and traffic warning lights.

A. Paint Application Equipment

   1. Self-Propelled or Mobile-Drawn Pneumatic Spraying Machines: The equipment to apply paint to pavements shall be a self-propelled or mobile-drawn pneumatic spraying machine with suitable arrangements of atomizing nozzles and controls to obtain the specified results, and meet all performance requirements for work in SCDOT rights-of-way

   2. Hand-Operated, Push-Type Machines: All machines, tools, and equipment used in performance of the work shall be approved and maintained in satisfactory operating condition. Hand-operated push-type machines of a type commonly used for application of paint to pavement surfaces will be acceptable for marking small streets and parking areas

B. Reflective Media Dispenser

   The dispenser for applying the reflective media shall be attached to the paint dispenser and shall operate automatically and simultaneously with the applicator through the same control mechanism.

1.3 SUBMITTALS

Submit the following for approval:

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

C. Composition Requirements: Manufacturer's current printed product description and Material Safety Data Sheets (MSDS) for each type paint/color proposed for use.

D. Qualifications: Documentation on personnel qualifications, as specified.

E. Certificates:

   Volatile Organic Compound (VOC): Certificate stating that the proposed pavement marking paint meets the VOC regulations of the local Air Pollution Control District having jurisdiction over the geographical area in which the project is located.

1.4 QUALITY ASSURANCE

A. Qualifications
Submit documentation certifying that pertinent personnel are qualified for equipment operation and handling of chemicals.

B. Traffic Controls

Suitable warning signs shall be placed near the beginning of the worksite and well ahead of the worksite for alerting approaching traffic from both directions. Small markers shall be placed along newly painted lines or freshly placed raised markers to control traffic and prevent damage to newly painted surfaces or displacement of raised pavement markers. Painting equipment shall be marked with large warning signs indicating slow-moving painting equipment in operation.

C. Maintenance of Traffic

When traffic in existing streets, roads or parking areas must be rerouted or controlled to accomplish the work, the necessary warning signs, flag-persons, and related equipment for the safe passage of vehicles shall be provided.

1.5 DELIVERY, STORAGE, AND HANDLING

All materials shall be delivered and stored in sealed containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, manufacturer's name, and directions, all of which shall be plainly legible at time of use.

1.6 ENVIRONMENTAL REQUIREMENTS

Pavement surface shall be free of snow, ice, or slush. Surface temperature shall be at least 40 degrees F and rising at the beginning of operations, except those involving shot or sand blasting. Operation shall cease during thunderstorms. Operation shall cease during rainfall, except for waterblasting and removal of previously applied chemicals. Waterblasting shall cease where surface water accumulation alters the effectiveness of material removal.

PART 2 - PRODUCTS

2.1 PAINT

The paint shall be homogeneous, easily stirred to smooth consistency, and shall show no hard settlement or other objectionable characteristics during a storage period of 6 months. Paints for parking areas shall conform to FS TT-P-1952B, color: yellow. Pavement marking paints shall comply with applicable state and local laws enacted to ensure compliance with Federal Clean Air Standards. Paint materials shall conform to the restrictions of the local Air Pollution Control District.

2.2 REFLECTIVE MEDIA

Reflective media for roads and streets shall conform to FS TT-B-1325, Type I, Gradation A or AASHTO M 247, Type I.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

Thoroughly clean surfaces to be marked before application of the pavement marking material. Dust, dirt, and
other granular surface deposits shall be removed by sweeping, blowing with compressed air, rinsing with water or a combination of these methods as required. Rubber deposits, surface laitance, existing paint markings, and other coatings adhering to the pavement shall be completely removed with scrapers, wire brushes, sandblasting, approved chemicals, or mechanical abrasion as directed. Areas of old pavement affected with oil or grease shall be scrubbed with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinsed thoroughly after each application. After cleaning, oil-soaked areas shall be sealed with cut shellac to prevent bleeding through the new paint. Pavement surfaces shall be allowed to dry, when water is used for cleaning, prior to striping or marking. Surfaces shall be recleaned, when work has been stopped due to rain.

A. Cleaning Existing Pavement Markings

1. In general, markings shall not be placed over existing pavement marking patterns. Remove existing pavement markings, which are in good condition but interfere or conflict with the newly applied marking patterns. Deteriorated or obscured markings that are not misleading or confusing or interfere with the adhesion of the new marking material do not require removal. New preformed and thermoplastic pavement markings shall not be applied over existing preformed or thermoplastic markings. Whenever grinding, scraping, sandblasting or other operations are performed the work must be conducted in such a manner that the finished pavement surface is not damaged or left in a pattern that is misleading or confusing. When these operations are completed the pavement surface shall be blown off with compressed air to remove residue and debris resulting from the cleaning work.

C. Cleaning Concrete Curing Compounds

1. On new or patched Portland cement concrete pavements, cleaning operations shall not begin until a minimum of 30 days after the placement of concrete. All new concrete pavement surfaces shall be cleaned by either sandblasting or water blasting. The extent of the blasting work shall be to clean and prepare the concrete surface as follows:

a. There is no visible evidence of curing compound on the peaks of the textured concrete surface.

b. There are no heavy puddled deposits of curing compound in the valleys of the textured concrete surface.

c. All remaining curing compound is intact; all loose and flaking material is removed.

d. The peaks of the textured pavement surface are rounded in profile and free of sharp edges and irregularities.

e. The surface to be marked is dry.

3.2 APPLICATION

All pavement markings and patterns shall be placed as shown on the plans.

A. Paint

Paint shall be applied to clean, dry surfaces, and only when air and pavement temperatures are above 40 degrees F and less than 95 degrees F. Paint temperature shall be maintained within these same limits. New asphalt pavement surfaces and new Portland concrete cement shall be allowed to cure for a period of not less than 30 days before applications of paint. Paint shall be applied pneumatically with approved equipment at rate of coverage specified. Provide guide lines and templates as necessary to control paint application. Special precautions shall be taken in marking numbers, letters, and symbols. Edges of
markings shall be sharply outlined.

1. Rate of Application:

   Pigmented binder shall be applied evenly to the pavement area to be coated at a rate of 90 plus or minus 5 square feet/gallon; at a wet film thickness of 15 mils (dry film of 8.5 mils). Glass spheres shall be applied uniformly to the wet paint on road and street pavement at a rate of 6 plus or minus 0.5 pounds of glass spheres per gallon of paint.

2. Drying: The maximum drying time requirements of the paint specifications will be strictly enforced to prevent undue softening of bitumen, and pickup, displacement, or discoloration by tires of traffic. If there is a delay in drying of the markings, painting operations shall be discontinued until cause of the slow drying is determined and corrected.

B. Reflective Media

   Application of reflective media shall immediately follow application of pigmented binder. Drop-on application of glass spheres shall be accomplished to insure that reflective media is evenly distributed at the specified rate of coverage. Should there be malfunction of either paint applicator or reflective media dispenser, operations shall be discontinued immediately until deficiency is corrected.

END OF SECTION 32 17 23