PG 1 Structural, Waterproofing & Masonry Repairs

Charleston, South Carolina

REBID Construction Documents

Prepared For

The Medical University of South Carolina
97 Jonathan Lucas Street
Charleston, SC 29425-1900

Owner Project Number: H51-9831-PG

ADC Project Number: 16202

March 3, 2017
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REBID Construction Documents

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March 3, 2017

Mr. Richard L. Cook, Jr., FRCI, RRC, RWC, REWC,
RBEC, RRO, CCS, CSRP, & LEED® AP
ADC Engineering, Inc.

Bill Ussery, PE
4SE Structural Engineers, Inc.

Eric Pinto, EIT
4SE Structural Engineers, Inc.
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**PROJECT NUMBER:** H51-9831-PG

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W303 DETAILS/SECTIONS
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INVITATION FOR CONSTRUCTION SERVICES

PROJECT NAME: Parking Garage #1 Structural, Waterproofing & Masonry Repairs

PROJECT NUMBER: H51-9831-PG

PROJECT LOCATION: Charleston, South Carolina

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: $1 Million - 2 Million

DESCRIPTION OF PROJECT: Base Bid work includes repairs to the 4th, 5th and 6th floors for structural modifications and minor building envelope repairs to the exterior building envelope including concrete repairs, localized coating restriping/repainting and complete replacement of all exterior sealant joint systems and one prefabricated joint system. Work includes phasing of each floor level to permit simultaneous parking and vehicle access. ALT 1 is for the same work of the Base Bid, but only for the 3rd floor. ALT 2 work includes restriping the 4th, 5th and 6th floors. ALT 3 work includes restriping the 3rd floor.


BIDDING DOCUMENTS/PLANS MAY BE OBTAINED FROM:

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: ADC Engineering, Inc.

A/E CONTACT: Mr. Rick Cook

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

City: Hanahan  State: SC  ZIP: 29410-

EMAIL: amandam@adcengineering.com

TELEPHONE: 843-566-0161  FAX: 843-566-0162

AGENCY: The Medical University of South Carolina

AGENCY PROJECT COORDINATOR: Mr. Wade Lewis Gatlin

ADDRESS: Street/PO Box: 97 Jonathan Lucas Street MSC 190

City: Charleston  State: SC  ZIP: 29425-

EMAIL: gatlin@musc.edu

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

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

PRE-BID DATE: 3/15/2017  TIME: 1 PM  PLACE: Room RR23, 325 Calhoun Street

BID CLOSING DATE: 4/5/2017  TIME: 2 PM  PLACE: Room RR23, 325 Calhoun Street

BID DELIVERY ADDRESSES:

HAND-DELIVERY:

Attn: Mr. Wade Lewis Gatlin

325 Calhoun Street, Room RR23
Charleston, SC 29425

MAIL SERVICE:

Attn: Mr. Wade Lewis Gatlin/ATTN: Debbie Zerba

325 Calhoun Street, MSC 109
Charleston, SC 29425

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

APPROVED BY:  

DATE: 3/8/17

OSE Project Manager
The Instructions to Bidders shall be the SCOSE Version of the AIA Document A701-1997, Instruction to Bidders which is incorporated herein by reference. Samples of these documents may be viewed at http://procurement.sc.gov/construction/ose-news.
Bid Bond

CONTRACTOR:  
(Name, legal status and address)

SURETY:  
(Name, legal status and principal place of business)

OWNER:  
(Name, legal status and address)  
The Medical University of South Carolina  
Engineering and Facilities  
97 Jonathan Lucas Street MSC 190  
Charleston, SC 29425-1900

PROJECT:  
(Name, location or address, and Project number, if any)  
PG 1 Structural, Waterproofing & Masonry Repairs  
Owner Project Number: H51-9831-PG

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may be in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety’s consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor’s bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such requirements shall be inserted herein.

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.
statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this day of ,

<table>
<thead>
<tr>
<th>(Principal)</th>
<th>(Seal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Title)</td>
<td></td>
</tr>
<tr>
<td>(Surety)</td>
<td>(Seal)</td>
</tr>
<tr>
<td>(Title)</td>
<td></td>
</tr>
<tr>
<td>(Witness)</td>
<td></td>
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</table>

(Witness)
BID SUBMITTED BY: (Bidder's Name)

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

FOR: PROJECT NAME: PG 1 Structural, Waterproofing & Masonry Repairs

PROJECT NUMBER: H51-9831-PG

OFFER

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

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

- [ ] Bid Bond with Power of Attorney
- [ ] Electronic Bid Bond
- [ ] Cashier's Check

(Bidder check one)

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

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

<table>
<thead>
<tr>
<th>ADDENDA</th>
<th>#1</th>
<th>#2</th>
<th>#3</th>
<th>#4</th>
<th>#5</th>
</tr>
</thead>
</table>

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

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

§ 6.1 BASE BID WORK (as indicated in the Bidding Documents and generally described as follows): Base Bid work includes repairs to the fourth, fifth and sixth floors (decks/levels) for structural modifications and minor building envelope repairs. The exterior building envelope includes concrete repairs, localized coating restriping/repainting and complete replacement of all exterior sealant joint systems and prefabricated joint systems.

which sum is hereafter called the Base Bid.

(Bidder to 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):** Alternate Number 1 work includes the same work as the Base Bid, but only for the third floor (deck/level).

ADD 15 Calendar Days

☐ 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):** Alternate Number 2 work includes restriping of the fourth, fifth and sixth floor.  

ADD 10 Calendar Days

☐ 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):** Alternate Number 3 work includes restriping of third floor.  

ADD 5 Calendar Days

☐ ADD TO or ☐ DEDUCT FROM BASE BID: $  

*(Bidder to mark appropriate box to clearly indicate the price adjustment offered for each Alternate)*

---

§ 6.3 UNIT PRICES:

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

<table>
<thead>
<tr>
<th>No.</th>
<th>ITEM</th>
<th>UNIT OF</th>
<th>MEASURE</th>
<th>ADD</th>
<th>DEDUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Epoxy Crack Repair (Greater than 1/16&quot;)</td>
<td>LF</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>2.</td>
<td>Crack Repair &lt;1/16”</td>
<td>LF</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>3.</td>
<td>Elastomeric Coating at Steel Support</td>
<td>EA</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>4.</td>
<td>Column Penetration Flashing</td>
<td>EA</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>5.</td>
<td>Perimeter Joint Caulking</td>
<td>LF</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>6.</td>
<td>Metal Floor Deck Cleaning/Repair</td>
<td>SF</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>7.</td>
<td>Steel Framing Cleaning, Painting</td>
<td>SF</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>8.</td>
<td>X-Brace Repair Plates</td>
<td>LF</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>9.</td>
<td>Epoxy Crack Repair</td>
<td>LF</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>10.</td>
<td>Concrete Repair/Replacement</td>
<td>SF</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>11.</td>
<td>Masonry Replacement</td>
<td>SF</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>12.</td>
<td>2 x 10 Nailers (at top of wall)</td>
<td>LF</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
</tbody>
</table>
§ 7. LISTING OF PROPOSED SUBCONTRACTORS PURSUANT TO SECTION 3020(b)(i), CHAPTER 35, TITLE 11 OF THE SOUTH CAROLINA CODE OF LAWS, AS AMENDED
(See Instructions on the following page BF-2A)

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

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

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 an Owner developed list of contractor/subcontractor specialties by contractor license category and/or subcategory for which bidder is required to identify the entity (subcontractor(s) and/or himself) Bidder will use to perform the work of each listed specialty.
   a. Column A: The Owner fills out this column, which identifies the contractor/subcontractor specialties for which the bidder must list either a subcontractor or himself as the entity that will perform this work. Subcontractor specialties are identified by contractor license categories or subcategories listed in Title 40 of the South Carolina Code of laws. Abbreviations of classifications to be listed after the specialty can be found at: http://www.llr.state.sc.us/POL/Contractors/PDFFiles/CLBClassificationAbbreviations.pdf. If the owner has not identified a specialty, the bidder does not list a subcontractor.
   b. Columns B and C: In these columns, the Bidder identifies the subcontractors it will use for the work of each specialty listed by the Owner in Column A. Bidder must identify only the subcontractor(s) who will perform the work and no others. Bidders should make sure that their identification of each subcontractor is clear and unambiguous. A listing that could be any number of different entities may be cause for rejection of the bid as non-responsive. For example, a listing of M&M without more may be problematic if there are multiple different licensed contractors in South Carolina whose names start with M&M.

2. Subcontractor Defined: For purposes of subcontractor listing, a subcontractor is an entity who will perform work or render service to the prime contractor to or about the construction site pursuant to a contract with the prime contractor. Bidder should not identify sub-subcontractors in the spaces provided on the bid form but only those entities with which bidder will contract directly. Likewise, do not identify material suppliers, manufacturers, and fabricators that will not perform physical work at the site of the project but will only supply materials or equipment to the bidder or proposed subcontractor(s).

3. Subcontractor Qualifications: Bidder must only list subcontractors who possess a South Carolina Contractor’s license with the license classification and/or subclassification identified by the Owner in the first column on the left. The subcontractor license must also be within the appropriate license group for the work of the specialty. If Bidder lists a subcontractor who is not qualified to perform the work, the Bidder will be rejected as non-responsive.

4. Use of Own forces: If under the terms of the Bidding Documents, Bidder is qualified to perform the work of a listed specialty and Bidder does not intend to subcontract such work but to use Bidder’s own employees to perform such work, the Bidder must insert its own name in the space provided for that specialty.

5. Use of Multiple Subcontractors:
   a. If Bidder intends to use multiple subcontractors to perform the work of a single specialty listing, Bidder must insert the name of each subcontractor Bidder will use, preferably separating the name of each by the word “and”.
   b. Optional Listing Prohibited: Bidder may not list multiple subcontractors for a specialty listing, in a form that provides the Bidder the option, after bid opening or award, to choose to use one or more but not all the listed subcontractors to perform the work for which they are listed. A listing, which on its face requires subsequent explanation to determine whether it is an optional listing, is non-responsive. If bidder intends to use multiple entities to perform the work for a single specialty listing, bidder must clearly set forth on the bid form such intent. Bidder may accomplish this by simply inserting the word “and” between the names of each entity listed for that specialty. Agency will reject as non-responsive a listing that contains the names of multiple subcontractors separated by a blank space, the word “or”, a virgule (that is a /), or any separator that the Agency may reasonably interpret as an optional listing.

6. If Bidder is awarded the contract, Bidder must, except with the approval of the Agency for good cause shown, use the listed entities to perform the work for which they are listed.

7. If Bidder is awarded the contract, Bidder will not be allowed to substitute another entity as subcontractor in place of a subcontractor listed in Section 7 of the Bid except for one or more of the reasons allowed by the SC Code of Laws.

8. Bidder’s failure to identify an entity (subcontractor or himself) to perform the work of a subcontractor specialty listed in the first column on the left will render the Bid non-responsive.
§ 8. LIST OF MANUFACTURERS, MATERIAL SUPPLIERS, AND SUBCONTRACTORS OTHER THAN SUBCONTRACTORS LISTED IN SECTION 7 ABOVE (FOR INFORMATION ONLY):

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

§ 9. TIME OF CONTRACT PERFORMANCE AND LIQUIDATED DAMAGES

a) CONTRACT TIME

Bidder agrees that the Date of Commencement of the Work shall be established in a Notice to Proceed to be issued by the Owner. Bidder agrees to substantially complete the Work within \( 135 \) Calendar Days from the Date of Commencement, subject to adjustments as provided in the Contract Documents.

b) LIQUIDATED DAMAGES

Bidder further agrees that from the compensation to be paid, the Owner shall retain as Liquidated Damages the amount of \( \$500.00 \) 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 amount is intended by the parties as the predetermined measure of compensation for actual damages, not as a penalty for nonperformance.

§ 10. AGREEMENTS

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

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

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

§ 11. ELECTRONIC BID BOND

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

ELECTRONIC BID BOND NUMBER: ______________________________________________________

SIGNATURE AND TITLE: ________________________________________________________________
SE-330
LUMP SUM BID FORM

CONTRACTOR'S CLASSIFICATIONS AND SUBCLASSIFICATIONS WITH LIMITATION

SC Contractor's License Number(s):

Classification(s) & Limits:

Subclassification(s) & Limits:

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

BIDDER’S LEGAL NAME:

ADDRESS:

TELEPHONE:

EMAIL:

SIGNATURE: DATE:

PRINT NAME:

TITLE:
The Form of the Contract shall be the SCOSE Version of the AIA Document A101-2007, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, which is incorporated herein by reference. Samples of these documents may be viewed at http://procurement.sc.gov/construction/ose-news.
The General Conditions of the Contract for Construction shall be the SCOSE Version of the AIA Document A201-2007, General Conditions of the Contract for Construction which is incorporated herein by reference. Samples of these documents may be viewed at http://procurement.sc.gov/construction/ose-news.
APPLICATION FOR MUSC CONSTRUCTION IDENTIFICATION BADGES

The following information is to be provided by the prime contractor for each employee, subcontractor(s), vendor or anyone contracted by them to be on the construction site that are required for the completion of the contract documents. The contractor is to submit this information to the MUSC Project Manager, 97 Jonathan Lucas Street, Charleston, South Carolina, or via facsimile at 843-792-0251. After the information is entered into the Identity Management Database, the contractor will be notified to contact Public Safety, 101 Doughty Street, Charleston, South Carolina, via facsimile at 843-792-6650, for scheduling of the time for the photograph identification badges to be issued. It will be the responsibility of the prime contractor to insure that all employees are wearing current badges. Anyone without a badge will be required to leave the site immediately. Public Safety will inspect for proper identification routinely and violators will be removed from the site. It will be the responsibility of the individual to replace any badges that are lost or stolen. The prime contractor at the completion of the project will return all badges to Public Safety. Please telephone Public Safety at 843-792-4023 should you have questions.

Construction Company______________________________________________________

Construction Company Representative:________________________________________

Construction Company Telephone:__________________________________________

Project Name:____________________________________________________________

Project Number:__________________________________________________________

Expiration Date of Construction Badge:____________________________________

Employee Name:__________________________________________________________

Employee Address:________________________________________________________

________________________________________________________________________

Employee Telephone Number:______________________________________________

Employee Social Security Number:___________________________________________

Employee’s Driver’s License Number and State______________________________

________________________________________________________________________

Employee Date of Birth:____________________________________________________

Employee Signature:______________________________________________________
HUMAN RESOURCES MANAGEMENT POLICY

TOBACCO-FREE CAMPUS

Policy 49

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

1. 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.

2. The use of tobacco products in University owned, operated or leased vehicles is prohibited.

3. Use of tobacco products is also prohibited in personal vehicles parked on MUSC property.

4. The use of tobacco products is prohibited on all streets and sidewalks within the Medical District as defined by the City of Charleston ordinance (see [Medical District map]).

5. MUSC also prohibits the use of tobacco products by staff on private properties adjacent to the Medical District without explicit approval from the property owner. Individuals should refrain from smoking in areas where smoke is likely to enter private property through entrances, windows, ventilation systems or other means and are expected to respect requests to refrain from smoking in particular areas if asked to do so by agents or employees of the University. Tobacco use on public property neighboring MUSC is highly discouraged.

6. Use of tobacco products while representing MUSC, wearing MUSC scrubs or uniforms, wearing an MUSC badge, or on paid break is prohibited.

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.

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. Contractors and vendors are expected to ensure full compliance at all times with this policy by any employees and/or subcontractors providing services on MUSC property.
2. Failure by the contractor/vendor or their employees to comply with the provisions of this policy could result in contractors/vendors (or their employee(s) violating this policy) being asked to leave campus and/or the termination of the service contract with the contractor or vendor.

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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<tr>
<th>Approved by:</th>
<th>Information Contact</th>
<th>Approved</th>
</tr>
</thead>
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<tr>
<td>Lisa P. Montgomery</td>
<td>Director of Human Resources Management</td>
<td>Effective March 1, 2012</td>
</tr>
<tr>
<td>Vice President for Finance &amp; Administration</td>
<td></td>
<td>Revised June 2013</td>
</tr>
</tbody>
</table>
KEY:
- MUSC Tobacco-Free Campus
- MUSC Tobacco-Free streets and sidewalks
- City of Charleston Smoke-Free Medical District streets and sidewalks
- Roper Hospital Tobacco-Free Campus
PROGRAM OBJECTIVES

1. MUSC/MUHA has adopted the following objectives:

   A. To provide maximum practical opportunities for Minority and Women's Business Enterprises (MWBEs) to participate as suppliers and contractors for our organization.

   B. To support the economic development of both small business enterprises and the minority community.

   C. To provide Minorities and Women equal opportunities for participation in Capital Projects construction (additions, renovations and new construction), procurement, professional services, and system-wide purchasing contracts.

   D. To provide procedures that will enable MUSC/MUHA to fulfill the goals of the State that are related to equal employment opportunities and affirmative actions in its construction contracts.

   E. To provide procedures for determining and monitoring MWBE participation and compliance with MWBE requirements stated in the contract documents. Also, to provide procedures for the solution of complaints concerning discrimination against any businesses holding contracts with the MUSC/MUHA.

   F. To evaluate and report to the MWBE Small and Minority Business Advocate and to MUSC/MUHA the results of contract activity, subject to the provisions of the MWBE Program.

2. In order to accomplish the objectives of the MWBE Program, the following specific goals have been established:

   A. To increase buying activities with Minority and Women's Enterprises that have the capability of providing construction services necessary for MUSC/MUHA operations.

   B. To actively and diligently seek out Minority and Women's Enterprises who have the potential of becoming a source of construction services.

   C. To promote awareness of the MWBE Program throughout MUSC/MUHA and the Community.

   D. To assist in the development of Minority and Women's Business Enterprise to insure that maximum opportunities are given to actively compete for construction opportunities with MUSC/MUHA.
SECTION I

GUIDELINES FOR M/WBE PARTICIPATION IN CONSTRUCTION SERVICES

CONSTRUCTION

These guidelines are established to accomplish the goal of providing for minority participation in Single and Multi-Prime capital construction contracts. The Medical University of South Carolina shall have a verifiable percentage goal of participation by Minority and Women's businesses in the total value of work for each project for which a contract is awarded. These guidelines are published to accomplish that end.

ITEM 1:

INTENT

It is the intent of these guidelines that the Medical University of South Carolina and the contractors and subcontractors performing construction contracts for the Medical University of South Carolina shall cooperate, and in good faith, do all things legal, proper and reasonable to achieve the verifiable goal of 12% for participation by Minority and Women's businesses in each construction project. Nothing contained in these guidelines shall be considered to require awarding authorities to award contracts or to make purchases of materials or equipment from M/WBE contractors who do not submit the lowest responsive responsible bid or bids.

ITEM 2:

DEFINITIONS

1. **Affirmative Action** - A plan, or specific measurable steps, taken by an agency, business or individuals to fully involve Minority Business Enterprises and Women's Business Enterprises in contracts and programs and to assure non-discrimination and equal opportunities in the performance of work, contracts, or any elements of a project administered by MUSC/MUHA Minority/Women's Business Enterprise Program.

2. **Bidder/Participant/Offeror** - Any person, firm, partnership, corporation, association, or joint venture seeking to be awarded a public contract or subcontract.

3. **Contract** - A mutually-binding legal document which defines a business relationship or any modification at the level of performance which obligates the seller to furnish supplies, equipment, materials or services, knowledge in performing construction and procurements, and obligating the buyer to pay for services.

4. **Contractor** - Any person, firm, partnership, corporation, association, or joint venture that has been awarded a contract purchase or service agreement at any level with MUSC/MUHA or that has contracted with the Owner to perform construction work or repair.

5. **Discrimination** – Any action that distinguishes, differentiates, separates, or segregates one person or group from another, solely on the basis of age, race, religion, color, sex, national origin, handicap or veteran's status.

6. **Goal** - An objective, expressed numerically to evaluate the type and amount of contract awards and performance of Minority- and Women-owned business enterprises.

7. **Good-Faith Effort** - All activity performed by bidders to encourage the participation of minority and women's enterprises (M/WBE) in contracts covered under this plan.

8. **Joint Venture** - A legal merger of two or more businesses (separately-owned firms) for the purpose of submitting a single bid, to carry out a single business enterprise for profit, for which purpose they combine their property, capital, efforts, skills or knowledge.

9. **MUSC** – Medical University of South Carolina
10. **MUHA** – Medical University Hospital Authority

11. **Minority (MBE)** - a person who is a citizen or lawful permanent resident of the United States and who is:
   - (a) **African-American**, that is, a person having origins in any of the original racial groups in Africa;
   - (b) **Hispanic**, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
   - (c) **Native-American**, that is, a person having origins in any of the original peoples of North America; or
   - (d) **Asian-American**, that is, persons having origin in any of the countries of the Far East, Southeast Asia, or the Indian areas.

12. **Minority or Women’s Business Enterprises-M/WBE** - a business enterprise owned and controlled at a minimum of 51% by one or more members of a group defined as a minority or as women. A business certified as a minority- or woman-owned enterprise will show evidence of ownership and management interests and the daily business operations are real and continuing, not created solely to meet the M/WBE requirements.

13. **Owner** – Medical University of South Carolina/Medical University Hospital Authority

14. **Owned and Controlled** - A business which is (1) a sole proprietorship legitimately owned by an individual who is a member of a minority and/or female, (2) a partnership or joint venture controlled by minorities and/or females, and in which at least 51% of the beneficial ownership interests legitimately are held by minorities and/or females, or (3) a corporation or other entity controlled by minorities and/or females, and in which at least 51% of the voting interests are legitimately held by minorities and/or females. In addition, these persons must control the management and operation of the business on a day-to-day basis.

15. **Subcontractor** - A firm under contract with the prime contractor for supplying materials or labor and materials and/or installations. The subcontractor may or may not provide materials in his subcontract. Work subcontracted in an emergency and which could not have been anticipated is excluded as a part of this program.

16. **Verifiable goal** – For purposes of the Single-Prime contracts, the advertising authority has adopted written guidelines specifying the actions that the prime contractor should consider taking to ensure a good-faith effort in the recruitment and selection of minority and women’s businesses for participation in contracts awarded; the required actions must be documented in writing by the contractor to the appropriate awarding authority.

**PART 3:**

**RESPONSIBILITIES**

1. **Medical University of South Carolina/Medical University Hospital Authority - Owner**

   MUSC/MUHA under the Single and Multi Prime contract system will be responsible for the following:

   (a) For contracts in excess of $500,000 estimated cost, notify Minority and Women’s Business firms within twenty-one (21) days prior to the bid opening through means of advertising in the *South Carolina Business Opportunities* of the opportunities. Advertisements will include:
      1. Project description and location;
      2. Locations where bidding documents may be reviewed;
      3. Name of a representative of the Owner who can be contacted during the advertising period to advise who the prospective bidders are;
      4. Date, time and location of the bid opening.
      5. Date, time and location of pre-bid conference, if scheduled. The twenty-one day advance time period may be reduced to ten days for contracts in the range of $100,000 to $500,000 in the estimated cost.

   (b) The pre-bid conference, if scheduled, is conducted by the representative of the Owner, and will be open to all known and anticipated prime contractors, subcontractors, material suppliers, and other bidders.
2. **Prime Contractor, Bidder or Offeror**

Prime Contractors under the Single and Multi-Prime contract system will be responsible for the following:

(a) Attend the scheduled mandatory pre-bid conference.
(b) Identify or determine those work areas of a subcontract where M/WBEs may have an interest in performing subcontract work.
(c) Submit, with the first application for payment, a description of the portion of the work to be executed by M/WBEs expressed as a percentage of the total contract price.
(d) If the Contractor elects to use a M/WBE firm that is not certified by the Governor’s Office of Small and Minority Business Assistance (OSMBA) the Contractor shall encourage the subcontractor to submit an application for certification within thirty (30) days of signing the Letter of Intent (Appendix II). If the firm does not submit an application within the specified time frame or fails to meet the certification criteria, the contract amount with that M/WBE firm will not be considered as M/WBE participation.
(e) Upon being named the apparent low bidder, the Bidder shall submit to the Project Manager their good faith backup documentation if they have not met their M/WBE goal.
(f) If, during the construction of a project, additional subcontracting opportunities become available, the prime or general contractors must make good-faith efforts to solicit sub-bids from M/WBEs.

3. **M/WBE Responsibilities**

M/WBE firms do not have to be certified to be listed on the bid documents; however, M/WBE firms that have been awarded contracts will not be credited towards MUSC/MUHA’s M/WBE Program unless they are certified with the Governor’s Office of Small and Minority Business Assistance (OSMBA).

(a) M/WBEs should make every effort to establish contacts and relationships with contractors for potential future business, including attending pre-bid conferences and subscribing to industry and trade journals.

(b) In addition, M/WBEs who are contacted by Owners or Bidders should respond promptly whether or not they wish to submit a bid. If an M/WBE firm is listed as a subcontractor or supplier, they will be responsible for completing a Letter of Intent (Appendix II) in a timely manner and returning it to the Prime Contractor.

(c) M/WBE who are not certified at the time the firm commits to provide services, should apply for certification with the Governor’s Office of Small and Minority Business Assistance (OSMBA) within thirty (30) days. If the M/WBE firm fails to submit an application within the specified time frame or if the M/WBE firm is not granted certification by the Certification Committee, that M/WBE firm’s contract dollars will not be counted as M/WBE participation.
SECTION II

M/WBE CONTRACT PROVISIONS

ITEM 1: PROVISIONS FOR CONSTRUCTION

A. APPLICATION:

The requirements of the MUSC/MUHA Minority and Women's Business Enterprise (M/WBE) Provisions and Guidelines are hereby made a part of these contract documents. The requirements shall apply to all contractors regardless of ownership. Copies of the M/WBE Program may be obtained from the M/WBE Administrator, Engineering and Facilities, 97 Jonathan Lucas Street, P.O. Box 250190, Charleston, SC 29425.

B. M/WBE SUBCONTRACT GOALS:

The goals for participation by M/WBE as subcontractors on this project have been set at 12%.

The Bidder shall provide documented proof, with the first application for payment, in the form of Appendix I, M/WBE Utilization Commitment Form the percentage of M/WBE participation. Submit signed copies of Appendix II - Letters Of Intent to Perform as a Subcontractor, to the Project Manager.

C. COMPLIANCE DOCUMENTATION:

If the M/WBE subcontract goals are not achieved, the Bidder shall provide the following documentation to the Project Manager with the first application for payment:

1. M/WBE Utilization Commitment (Appendix I)

2. With the first pay application, the Bidder shall provide to the Project Manager signed Letters of Intent to Perform as a Subcontractor (Appendix II) for the M/WBE subcontractors listed on Appendix I.

3. After review of the Bidder’s Good Faith Efforts, the Bidder may request and be granted a Waiver of the M/WBE goals that have not been met for that particular project. A Waiver may be granted upon review of the Bidder’s documentation and determination that, in fact, a Good Faith Effort has been put forth.

   NOTE: If the Bidder provides sufficient evidence on the M/WBE Utilization Commitment (Appendix I) that the goals have been met, or awards all subcontracts to M/WBEs, the Good Faith Efforts Documentation as listed above in #3 may not be required.
APPENDIX I
M/WBE UTILIZATION COMMITMENT FORM
FOR
CONSTRUCTION

We, ______________________________________________, do certify that on the _________________________________
(Bidder)      (Project Name)
___________________________________, ___________________________________ we will expend a minimum of ____%
(Project Number)    (Dollar Amount of Bid)
of the total dollar amount of the contract with Minority/Woment Business Enterprises. M/WBEs will be employed as construction
subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms
listed below.

If the bidder intends to subcontract, this form must be completed irregardless of the amount of M/WBE participation attained.

<table>
<thead>
<tr>
<th>NAME OF FIRM</th>
<th>PHONE NUMBER</th>
<th>MBE OR WBE</th>
<th>Description of Work</th>
<th>Dollar Value</th>
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The undersigned will enter into a formal agreement with Minority/Women's Firms for work listed in this schedule conditional upon
execution of a contract with the MUSC/MUHA.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the
commitment herein set forth.

Date: ___________________
(Name & Phone No. of Authorized Officer)

Signature: ___________________

Title: ___________________

APPENDIX I OR APPENDIX II MUST BE SUBMITTED WITH THE FIRST APPLICATION FOR PAYMENT
APPENDIX II
LETTER OF INTENT
TO
PERFORM AS A
SUBCONTRACTOR OR SUBCONSULTANT
(PROVIDE MATERIALS OR/ & SERVICES)

PROJECT: _____________________________________________________________________________________
(Project Name)

TO: ___________________________________________________________________________________________
(Name of Prime Bidder)

The undersigned intends to perform work in connection with the above project as

_____ Minority Business Enterprise   _____ Women's Business Enterprise

_____ The M/WBE status of the undersigned is certified by the Governor's Office of Small and Minority Business Assistance. Our M/WBE certification number is _______________________________.

_____ The M/WBE status of the undersigned is not certified by the Governor’s Office of Small and Minority Business Assistance. Our application was submitted on _________________________________.

The undersigned is prepared to perform the following described work or provide materials or services in connection with the above project (specify in detail particular work items, materials or services to be performed or provided) at the following price:

______________________________________________________.

You have projected the following commencement date for such work, and the undersigned is projecting completion of such work as follows:

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<tr>
<th>Items</th>
<th>Projected Commencement Date</th>
<th>Projected Completion Date</th>
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Subcontracting at any tier must be reported and is subject to all M/WBE compliance requirements. This form shall be used for M/WBE subcontracting at any level.

Date: ____________________  ________________________________________
(Name & Phone No. of M/WBE Company)

________________________________________
(Name & Title of Authorized Office)

(Signature)

THE PRIME CONTRACTOR MUST GET THIS FORM COMPLETED BY THE M/WBE SUBCONTRACTORS
APPENDIX III
M/WBE DOCUMENTATION OF CONTRACT PAYMENTS FORM

Prime Contractor: __________________________________________________________

Address & Phone: __________________________________________________________

Project Name: _____________________________________________________________

Pay Application #: ___________________ Period: ______________________________

The following is a list of payments made to Minority and Women Business Enterprises certified by the Governor's Office of Small and Minority Business Assistance on this project for the above mentioned period.

<table>
<thead>
<tr>
<th>M/WBE FIRM NAME</th>
<th>INDICATE MBE OR WBE</th>
<th>OSMBA CERTIFICATION</th>
<th>AMOUNT TO BE PAID THIS PERIOD</th>
<th>TOTAL PAYMENTS TO DATE</th>
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Date: ______________ Name of Authorized Officer __________________________

Signature __________________________ Title ________________________________

SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT
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: PG 1 Structural, Waterproofing & Masonry Repairs
State Project Number: H51-9831-PG
Brief Description of Awarded Work, as found on the SE-330 or SE-332, Bid Form: See SE-330, Bid Form and Section 01 21 10, Unit Prices and Allowances.

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

Name: ____________________________________________
Address: __________________________________________

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 ___________ , 2016

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 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 Surety resulting from the Contractor Default; or

4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and:

4.4.1 After investigation, determine the amount for which it may be liable to the Agency and, within 60 days of waiving its rights under this paragraph, tender payment thereof to the Agency; or

4.4.2 Deny liability in whole or in part and notify the Agency, citing the reasons therefore.

5. Provided Surety has proceeded under paragraphs 4.1, 4.2, or 4.3, the Agency shall pay the Balance of the Contract Sum to either:

5.1 Surety in accordance with the terms of the Contract; or

5.2 Another contractor selected pursuant to paragraph 4.3 to perform the Contract.

5.3 The balance of the Contract Sum due either the Surety or another contractor shall be reduced by the amount of damages as described in paragraph 7.

6. If the Surety does not proceed as provided in paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond 15 days after receipt of written notice from the Agency to the Surety demanding that the Surety perform its obligations under this Bond, and the Agency shall be entitled to enforce any remedy available to the Agency.

6.1 If the Surety proceeds as provided in paragraph 4.4 and the Agency refuses the payment tendered or the Surety has denied liability, in whole or in part, then without further notice the Agency shall be entitled to enforce any remedy available to the Agency.

6.2 Any dispute, suit, action or proceeding arising out of or relating to this Bond shall be governed by the Dispute Resolution process defined in the Contract Documents and the laws of the State of South Carolina.

7. After the Agency has terminated the Contractor's right to complete the Contract, and if the Surety elects to act under paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Agency shall be those of the Contractor under the Contract, and the responsibilities of the Agency to the Surety shall those of the Agency under the Contract. To a limit of the amount of this Bond, but subject to commitment by the Agency of the Balance of the Contract Sum to mitigation of costs and damages on the Contract, the Surety is obligated to the Agency without duplication for:

7.1 The responsibilities of the Contractor for correction of defective Work and completion of the Contract; and

7.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under paragraph 4; and

7.3 Damages awarded pursuant to the Dispute Resolution Provisions of the Contract. Surety may join in any Dispute Resolution proceeding brought under the Contract and shall be bound by the results thereof; and

7.4 Liquidated Damages, or if no Liquidated Damages are specified in the Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. The Surety shall not be liable to the Agency or others for obligations of the Contractor that are unrelated to the Contract, and the Balance of the Contract Sum shall not be reduced or set-off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Agency or its heirs, executors, administrators, or successors.

9. The Surety hereby waives notice of any change, including changes of time, to the contract or to related subcontracts, purchase orders and other obligations.

10. Notice to the Surety, the Agency or the Contractor shall be mailed or delivered to the address shown on the signature page.

11. Definitions

11.1 Balance of the Contract Sum: The total amount payable by the Agency to the Contractor under the Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts to be received by the Agency in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Contract.

11.2 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform the Contract or otherwise to comply with the terms of the Contract.
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

due 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: PG 1 Structural, Waterproofing & Masonry Repairs
State Project Number: H51-9831-PG
Brief Description of Awarded Work, as found on the SE-330 or SE-332, Bid Form: See SE-330, Bid Form and Section 01 21 10, Unit Prices and Allowances.

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

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

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

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

DATED this __________ day of __________, 20__

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: ________________________________
(Witness: ________________________________

(Attach Power of Attorney)

(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.
CHANGE ORDER TO CONSTRUCTION CONTRACT

AGENCY: The Medical University of South Carolina
PROJECT NAME: PG 1 Structural, Waterproofing & Masonry Repairs
PROJECT NUMBER: H51-9831-PG

CONTRACTOR: 

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

ADJUSTMENTS IN THE CONTRACT SUM:

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

ADJUSTMENTS IN THE CONTRACT TIME:

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

CONTRACTOR ACCEPTANCE:

BY: ___________________________ Date: ___________________________
(Signature of Representative)
Print Name: ___________________________

A/E RECOMMENDATION FOR ACCEPTANCE:

BY: ___________________________ Date: ___________________________
(Signature of Representative)
Print Name: ___________________________

AGENCY ACCEPTANCE AND CERTIFICATION:

BY: ___________________________ Date: ___________________________
(Signature of Representative)
Print Name: ___________________________

Change is within Agency Construction Contract Change Order Certification of: $ ____________ 
Yes ☐ No ☐

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

AUTHORIZED BY: ___________________________ DATE: ___________________________
(OSE Project Manager)

SUBMIT THE FOLLOWING TO OSE
1. SE-380, fully completed and signed by the Contractor, A/E and Agency;
2. Detailed back-up information from the Contractor/Subcontractor(s) that justifies the costs and schedule changes shown.
3. If any item exceeds Agency certification, OSE will authorize the SE-380 and return to Agency.
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09 96 00  High Performance Coatings

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32 17 23  Pavement Markings
SECTION 01 11 00
SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY

A. The building will remain completely functional and fully protected at all times during the construction work.

B. Sequencing

1. Work includes phasing of each floor (deck/level) for repair work to permit simultaneous parking and vehicle access as depicted on Sheet T002. The drawing depicts areas of work to be phased not the order of phasing which is at the Contractor’s discretion. 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.

2. Submit a weekly plan with weekly progress schedule by parking floor (deck/level), indicating work areas.

   a. Only one area of a given floor (deck/level) can be closed off at a time and ingress/egress must be maintained. See drawings for individual floor (deck/level) phasing requirements.

   b. Critical areas shall be completed from Friday at 5PM until Monday at 5 AM, weekdays from 6 PM to 6 AM.

   c. Provide all signage, markings and barricade for redirecting parking/traffic.

C. Base Bid work includes repairs to the fourth, fifth and sixth floors (decks/levels) for structural modifications and minor building envelope repairs to the exterior building envelope including concrete repairs, localized coating restriping/repainting and complete replacement of all exterior sealant joint systems and prefabricated joint systems.

   1. Demolition of the masonry, CMU, concrete and precast down to the deck in accordance with Section 02 04 03, Cutting and Patching for Building Envelope and Section 02 05 03, Demolition and Removal for Building Envelope and as indicated on the structural drawings.

   2. Provide cast-in-place concrete in accordance with Section 03 30 00, Cast-In-Place Concrete.

   3. Limited concrete restoration in accordance with Section 03 90 03, Concrete Restoration for Top Deck.

Summary of Work
01 11 00-1

16202
4. Provide unit masonry in accordance with Section 04 20 00, Unit Masonry.

5. Where indicated, removal and structural modifications of brick veneer is required. For areas where masonry remains, repointing is required. Where CMU is not removed permanently, contractor shall remove existing paint/coating and provide new breathable coating system in accordance with Section 04 50 03, Select Masonry Replacement, Restoration and Cleaning.

6. Provide structural steel in accordance with Section 05 12 00, Structural Steel.

7. In addition to the structural modifications, localized deck surface shall be repaired to receive a vehicular traffic grade elastomeric coating including the curbs, sidewalks and ramp to lower deck in accordance with Section 07 14 03, Concrete Deck Coating for Vehicular Traffic.

8. Provide perforated metal wall panels in accordance with Section 07 42 13.04, Metal Wall Panels, Perforated.

9. Provide prefabricated parking garage joints in accordance with Section 07 91 03, Prefabricated Parking Garage Joints at each deck/level as previously completed on the top deck.

10. Complete removal and replacement of all exterior sealant joints and the prefabricated/preformed joints for the exterior facade will be required in accordance with Section 07 92 03, Sealants for Building Envelope.

11. Provide high performance coatings in accordance with Section 09 96 00, High Performance Coatings.

12. For Alternate Numbers 2 and 3, completely remove existing painting/striping and preparing of parking deck surfaces for new painting/striping for parking spaces in accordance with Section 32 17 23, Pavement Markings

D. Alternate Number 1 work includes the same work as the Base Bid, but only for the third floor (deck/level).

E. Alternate Number 2 work includes restriping of the fourth, fifth and sixth floor.

F. Alternate Number 3 work includes restriping of third floor.

G. Unit Prices and Allowances are included in accordance with Section 01 21 10, Unit Prices and Allowances and are to be included in the Base Bid.

1.02 RELATED REQUIREMENTS

A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this Section.
B. The attention of the contractor of this Section is directed to the INSTRUCTIONS TO BIDDERS concerning substitution of materials and equipment.

1. Submit proposed substitution of products or systems on the form provided in Section 01 60 01, Substitution Request Form.

1.03 CONTRACT METHOD

A. Construct the Work under a single lump sum contract.

B. Alternates may be accepted in any order or combination and must determine the low Bidder based on the sum of the Base Bid and Alternates accepted.

C. All unit price items listed on the Bid Form and quantities noted in Section 01 21 10, Unit Prices and Allowances are to be included in the Base Bid.

1.04 WORK BY OTHERS

A. Work of the Project executed prior to start of Work of this Contract, and which is specifically excluded from this Contract:

1. Not applicable.

1.05 CONTRACTOR USE OF PREMISES

A. Limit use of premises to specific work, storage, and access.

1. All temporary protection, covered walkways, signage and monitoring safety is the Contractor’s responsibility.

B. Access to site/roof shall be from the exterior using Contractor’s means and methods. No interior access is permitted unless directly related to the work.

C. Contractor Layout Space:

1. Limited and only at locations directed and approved by Owner.

2. Only areas adjacent to the building may be used.

3. Do not allow traffic or equipment storage outside of the approved areas.

4. No access to inside of building is permitted without prior approval.

D. SDS sheets are required for all products/materials used for this project. Any products with strong or distinct odors must be identified prior to use and submitted to Consultant/Engineer for review and approval.

E. Maintain safe access to, from and around building for occupants, visitors and pedestrians.
F. Coordinate use of premises under direction of Owner.

G. Assume full responsibility for protection and safekeeping of materials, equipment and products under this Contract.

H. Obtain and pay for use of additional storage of work areas needed for operations under this Contract.

1. All materials and equipment on site will be stored in a trailer, and secured each night.

2. Secure access to ladders and scaffolding at the end of each day.

I. Daily clean-up and general safety are critical to building function and shall be primary contractor’s priority.

J. Secure motorized equipment and render inoperable during non-working hours.

K. Adhere to Owner’s security, badging and access requirements.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 11 00
SECTION 01 21 10
UNIT PRICES AND ALLOWANCES

PART 1 - GENERAL

1.01 SUMMARY

A. Unit Prices

1. The unit price item, unit of measure and add/deduct price are included on the Bid Form. Provide unit prices for the specific items listed on the Bid Form. A lump sum cost for the quantity amount is to be included within the Base Bid for each item.

<table>
<thead>
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<th>No.</th>
<th>Item</th>
<th>Base Bid QTY.</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Epoxy Crack Repair (Greater than 1/16&quot;)</td>
<td>300</td>
<td>LF</td>
</tr>
<tr>
<td>2.</td>
<td>Crack Repair &lt;1/16”</td>
<td>300</td>
<td>LF</td>
</tr>
<tr>
<td>3.</td>
<td>Elastomeric Coating at Steel Support</td>
<td>40</td>
<td>EA</td>
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<tr>
<td>4.</td>
<td>Column Penetration Flashing</td>
<td>135</td>
<td>EA</td>
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<tr>
<td>5.</td>
<td>Perimeter Joint Caulking</td>
<td>2420</td>
<td>LF</td>
</tr>
<tr>
<td>6.</td>
<td>Metal Floor Deck Cleaning/Repair</td>
<td>350</td>
<td>SF</td>
</tr>
<tr>
<td>7.</td>
<td>Steel Framing Cleaning, Painting</td>
<td>4400</td>
<td>SF</td>
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<td>8.</td>
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<td>235</td>
<td>SF</td>
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<tr>
<td>12.</td>
<td>2 x 10 Nailers (at top of wall)</td>
<td>235</td>
<td>LF</td>
</tr>
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</table>

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 $7,500 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.

1.02 RELATED REQUIREMENTS

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

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

C. Section 01 33 00: Submittals: Submission of Manufacturers' Instructions, Shop Drawings, Product Data, and Certificates.
D. Section 01 77 00: Contract Close-Out.
E. All technical specification sections.

1.03 COORDINATION

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

PART 2 - PRODUCTS

2.01 General Contract Unit Price Quantities

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

2.02 General Contract Allowances

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

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 21 10
SECTION 01 23 00

ALTERNATES

PART 1 - GENERAL

1.01 SUMMARY

A. Alternate Number 1 work includes the same work as the Base Bid, but only for the third floor (deck/level).

B. Alternate Number 2 work includes restriping of the fourth, fifth and sixth floor.

C. Alternate Number 3 work includes restriping of third floor.

1.02 RELATED REQUIREMENTS

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

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

C. All sections of specifications and drawings required to accomplish the general work defined above.

1.03 PROCEDURES

A. Alternates may be accepted in any order or combination and must determine the low Bidder based on the sum of the Base Bid and Alternates accepted.

B. Coordinate related work and modify surrounding work as required to complete the Work, including changes under each Alternate, when acceptance is designated in Owner-Contractor Agreement.

1.04 ACCEPTANCE

A. Alternates may be selected in any combination to be incorporated into the contract, as determined by the Owner. Agency can select any or all alternates, or reject any or all alternates solely at the decision of the agency.

B. Alternate bids accepted by Owner will be written into Contract or incorporated by change order.

1.05 SUBCONTRACTORS

A. Bid Form requires naming of various subcontractors whose proposals have been used under the Base Bid. If acceptance of an alternate will cause names of any subcontractor to be changed due to variances in Alternate Sub-Bids, prime bidder shall state such changes at bottom of Bid Form. These changes to Base Bid shall give substituted subcontractor's name, section of work involved, and Alternate Number, which make change necessary.
PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 23 00
PART 1 - GENERAL

1.01 SUMMARY

A. Each week, provide an email summary of the progress schedule work for the previous seven days and the next 7 days no later than Friday by 8 AM.

B. Sequencing

1. Submit a weekly plan with weekly progress schedule by parking level, indicating work areas.
   a. Only one level/deck can be closed off at a time and ingress/egress must be maintained. See drawings for individual deck/level phasing requirements.
   b. Critical areas shall be completed from Friday at 5PM until Monday at 5 AM, weekdays from 6 PM to 6 AM.
   c. Provide all signage, markings and barricade for redirecting parking/traffic.

C. Provide coordination and notification with Owner and Third Party Inspection Services.

D. Maintain safe, protected ingress/egress of all entrances at all times.

E. Seven (7) days notice is required to Owner and Consultant/Engineer for any element or phase of work where Contractor’s access equipment will be removed/relocated to ensure Owner and Consultant/Engineer have access to review and/or observe if requested.

1. To be noted in Progress Schedule Summary.

F. Seven (7) days notice to Owner and Consultant/Engineer and written approval is required for all items affecting function/use of building, including any shutdowns, interruptions in services, or disconnection of services.

1. This includes any work at or around air intakes, louvers, vents or other mechanical equipment that can allow the odors/fumes/smells of work materials and/or equipment to enter the building.

2. To be noted in Progress Schedule Summary.

G. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
H. Use only approved laydown and storage areas discussed in Pre-Construction Conference, unless otherwise discussed and specifically approved by Owner.

I. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service such equipment.

J. Coordinate space requirements and installation of mechanical and electrical work, which are indicated on Drawings. Coordinate routing for pipes and conduit as closely as possible with Owner. Place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

K. Coordinate Owner furnished equipment, materials and labor. Provide written notice to Owner, seven (7) days prior to work needed in schedule.

L. In finished areas contractor should anticipate and verify if concealed pipes, ducts, and wiring within the construction exist except as indicated otherwise. Coordinate locations of fixtures and outlets with finish elements.

M. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion.

N. Coordinate access to site for correction of defective Work, and Work not in accordance with Construction Documents to minimize disruption of Owner's activities.

O. Coordinate each manufacturer’s site visit/inspection with Owner personnel at least three (3) days prior to the visit. Provide a complete copy of the field report from the manufacturer within three (3) days.

1.02 RELATED REQUIREMENTS

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

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

C. Technical Specifications and Drawings.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 31 13

Coordination
01 31 13-2

16202
SECTION 01 31 19
PROGRESS SCHEDULE MEETINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Sequencing

1. Submit a weekly plan with weekly progress schedule by parking level, indicating work areas.
   a. Only one level/deck can be closed off at a time and ingress/egress must be maintained. See drawings for individual deck/level phasing requirements.
   b. Critical areas shall be completed from Friday at 5PM until Monday at 5 AM, weekdays from 6 PM to 6 AM.
   c. Provide all signage, markings and barricade for redirecting parking/traffic.

B. Owner and Consultant/Engineer shall establish and schedule Pre-Construction Conference and all other meetings. The contractor shall coordinate and administer Pre-Construction Conference meeting, weekly progress schedule meetings, and specially called meetings throughout progress of the work. Weekly progress schedule meeting will include contractors, project manager, superintendent and applicable subcontractors.

1. Prepare agenda for meetings.
2. Distribute written notice of each meeting four (4) days in advance of meeting date.
3. Make physical arrangements for meetings.
4. Preside at meetings.
5. Record minutes: Include all significant proceedings and decisions.
6. Reproduce and distribute copies of minutes within three (3) days after each meeting.

C. Representatives of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

D. Consultant/Engineer may attend meetings to ascertain that work is expedited consistent with Construction Documents and construction schedules.

E. Consultant/Engineer shall be notified of all such meetings, and be provided written summary of each.
1.02 RELATED REQUIREMENTS

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

B. The attention of the contractor and the subcontractor of this section is directed to the Instructions to Bidders concerning substitution of materials and equipment.

C. Section 01 31 13: Coordination

D. Section 01 32 03: Project Schedule

E. Section 01 33 00: Submittals, Construction Schedules and Submittals.

F. Section 01 77 00: Contract Close-Out, Project Record Documents.

G. Technical Specifications and Drawings.

1.03 PRE-CONSTRUCTION CONFERENCE MEETING

A. Schedule after submittals have been provided and approved, before any construction begins.

B. Location: At Project Site.

C. Consultant/Engineer will administer Pre-Construction Conference for execution of Owner-Contractor Agreement and exchange of preliminary submittals.

D. Attendance:

1. Owner's Representative.
2. Consultant/Engineer.
3. OSE Project Manager (if applicable).
4. Resident Project Representative.
5. Contractor's Superintendent
7. Major Suppliers
8. Others as Appropriate.

E. Suggested Agenda:

1. Distribution and discussion of:
   a. List of major subcontractors and suppliers
   b. Projected Construction Schedules.

Progress Schedule Meetings
01 31 19-2
2. Review of project documentation of existing conditions submittal.

3. Critical work sequencing and weekly progress schedule.

4. Major deliveries and priorities

5. Project Coordination
   a. Designation of responsible personnel.

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

1.04 PROGRESS MEETINGS

A. Schedule and administer Project meetings throughout progress of the work at weekly intervals, called meetings, and pre-installation conferences.

B. Location of Meetings: At Project Site.
C. Attendance:
   1. Consultant/Engineer as needed.
   2. Subcontractors as appropriate to agenda.
   3. Suppliers as appropriate to agenda.
   4. Others.

D. Suggested Agenda:
   1. Email no later than 8 AM on Friday of each week.
   2. Review, approval of minutes of previous meeting.
   3. Review of work progress since previous meeting.
   4. Field observation, problems, conflicts.
   5. Problems, which impede Construction Progress Schedule.
   6. Review of off-site fabrication, delivery schedules.
   7. Corrective measures and procedures to regain projected schedule.
   8. Revisions to Construction Schedule.
  10. Coordination of schedules.
  11. Review submittal schedules; expedite as required.
  13. Review proposed changes for:
       a. Effect on construction schedule and on completion date.
       b. Effect on other contracts of project.
  14. Pending changes and substitutions.
  15. Other business.

1.05 INSTALLATION MEETINGS

A. When required in individual specification section, convene a pre-installation conference at work site prior to commencing work of the section.
B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Consultant/Engineer seven (7) days in advance of meeting date.

D. Prepare agenda, preside at conference, record minutes, and distribute copies within three (3) days after the conference to participants, with two copies to Consultant/Engineer.

E. Review conditions of installation, preparation and installation procedures, and coordination with related work.

F. Required mock-up submittals shall be received at least 7 days prior to meeting and shall be completed for the pre-installation meeting.

1.06 MANUFACTURERS SITE VISITS

A. Owner and Consultant/Engineer shall be notified at least three (3) days in advance of any manufacturers site visit.

B. Owner and Consultant/Engineer shall be provided a complete copy of report/notes within three (3) days of visit.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 31 19
SECTION 01 32 03

PROJECT SCHEDULE

PART 1 - GENERAL

1.01 SUMMARY

A. Sequencing

1. Submit a weekly plan with weekly progress schedule by parking level, indicating work areas.

   a. Only one level/deck can be closed off at a time and ingress/egress must be maintained. See drawings for individual deck/level phasing requirements.

   b. Critical areas shall be completed from Friday at 5PM until Monday at 5 AM, weekdays from 6 PM to 6 AM.

   c. Provide all signage, markings and barricade for redirecting parking/traffic.

B. Prepare a critical path method (CPM) schedule that includes submittal review, any required engineering, procurement of materials, construction and agency required third party inspection testing activities or manufacturer milestone or other inspections. The CPM schedule shall cover the time from Contract Award/Date of Commencement Proceed to the Contract completion date. The CPM schedule shall incorporate labor, equipment and quantity resource data. The principles and definitions of the terms used herein shall be as set forth in Associated General Contractors of America Construction Planning and Scheduling Manual, Second Edition.

   1. Provide an updated overall project schedule each month with application for payment.

   2. Ensure progress and project schedules indicate shutdowns, obstructions or other events that affect Owner or requires Owner’s approval.

C. Each week, provide a written progress schedule of the previous 7 days and the planned work for the next 7 days no later than 8 AM on Friday. This is in addition to the coordination requirements of Section 01 31 19, Progress Schedule Meetings and Section 01 31 13, Coordination. Attach plan view of facility to email for clarification of work areas.

D. Provide schedules in accordance with Section 01 33 00, Submittals.
E. Contractor shall request, from the Owner, a calendar of all scheduled events which will/may affect the overall project schedule, weekly progress schedule and sequence of work.

F. Inclement weather days will not be provided for days when no work was scheduled for that day.

1.02 RELATED REQUIREMENTS

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

B. Section 01 31 13: Coordination

C. Section 01 31 19: Progress Schedule Meetings

D. Section 01 33 00: Submittals

E. Technical Specifications and Drawings

1.03 REFERENCES

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

B. ASSOCIATED GENERAL CONTRACTORS OF AMERICA (AGCA)

1.04 SUBMITTALS

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

B. Project schedule and format for weekly progress schedule

C. Weekly progress schedule

1.05 NETWORK SYSTEM FORMAT

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

B. Schedule Diagrams

   1. Show activity number, description, early dates, float, and all relationships, i.e. logic ties, resources and cost. Show the sequence, order, and
interdependence of activities in which the work is to be accomplished. The basic concept of a network analysis diagram will be followed to show how the start of a given activity is dependent on the physical completion of preceding activities and how its physical completion restricts or restrains the start of following activities. A minimum of 30 calendar days (22 work days) duration, or more if so specified, shall be allowed for Owner processing, approval and return of submittals, samples and shop drawings where Owner approval is required.

2. In addition to construction activities, detailed network activities shall include the submittals, procurement, and Owner activities impacting progress.

3. Submittal activities shall include review and approval of all submittals.

4. Procurement activities shall include all materials and equipment, receipt of materials with estimated procurement costs of major items for which payment of materials will be requested in advance of installation, fabrication of special material and equipment, and their installation and testing.

5. Show activities of the Owner that affect progress and contract-required dates for completion of all or parts of the work. Show activities indicating Owner furnished materials and equipment utilizing delivery dates indicated in the clause titled "Owner Furnished Property" of the Contract Clauses.

1.06 SCHEDULE DIAGRAMS

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

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

2. Each schedule activity shall be cost and resource loaded to include each type of trade or labor, e.g., carpenters, plumbers, electricians, etc. Activity duration shall be in workdays. All activities shall indicate the average number of workers per day planned during execution of the activity.

3. At a minimum, each schedule activity shall contain codes by:

   a. Responsibility; include but not be limited to Owner Furnished Materials, Contractor/Subcontractor, Supplier/Vendor, Consultant, etc.

   b. Location; such as, building specific, phases of construction and/or areas within a building.
c. Mock-up and approval shall be included within schedule.

d. Request of the Consultant/Engineer; additional codes may be required such as phases, buildings, areas within a building.

e. Key milestones as identified by contract or furnished by the Consultant/Engineer; Proposed Change (PC) Numbers, Modification Numbers, Requests for Information (RFI's), and/or Bid Items as requested by the Consultant/Engineer.

f. All activities must be less than or equal to 7 work days and $10,000, unless approved to be greater by the Consultant/Engineer.

g. Detailed description of each activity (i.e. asbestos removal, mobilization, roof demolition and installation sheet metal, sealants, etc.). In each activity, give quantity and unit of measure so that the amount of work the activity involves is clearly communicated.

h. Only two (2) open-ended activities are allowed; the first and last activities.

i. Three phases of control (Preparatory, Initial, and Follow-up) must be included in the schedule for each activity identified as a Definable Feature of Work by the Consultant/Engineer (See Quality Control Plan).

j. Out of sequence progress if applicable shall be handled through Retained Logic, not the Default Option of Progress Override.

k. Progress shall be calculated based on remaining duration (RD), not percent complete.

l. All changes to activities except jointly coordinated progress updates (i.e., duration changes, logic revisions, imposition of constraints, etc.) shall be recorded with a note in the activity log field. The log shall include, as a minimum, the date and reason for the change, as well as the Owner representative granting approval for the change.

m. The use of resource leveling, either manual or automatic, is discouraged. Any resource leveling must be specifically highlighted for the Consultant/Engineer's approval.

n. The use or start-to-start or finish-to-finish and lags is discouraged. Any relationships other than finish-to-start must be specifically highlighted for Consultant/Engineer approval and recorded with an explanatory note in the activity log field.
1.07 SUBMISSION AND APPROVAL

A. Preliminary Meeting

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

1.08 REVIEW AND EVALUATION

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

1.09 CHANGES

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

1.10 APPROVED SCHEDULE

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

1.11 PROGRESS SCHEDULE MEETINGS

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

1.12 CONTRACT MODIFICATION

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

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

B. Inclement weather days will not be provided for days when no work was scheduled for that day.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 32 03
SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

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

1.02 RELATED REQUIREMENTS

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

1.03 PROCEDURES

A. Deliver submittals to Consultant/Engineer at address listed on cover of Project Manual. Use the Required Submittal List in Section 01 33 02, Required Submittal List as a Table of Contents for the Submittal Package.
B. Provide all required submittals bound together as a single package in sequential order in accordance with the Required Submittal List. Any submittal packages not adhering to this requirement will be returned to the Contractor.

C. Submit the number of copies, which Contractor requires, plus two copies, which will be retained by Consultant/Engineer.

D. Transmit each item required under the attached submittal list. The Required Submittal List shall be used as the Table of Contents for the submission package. Identify Project, Contractor, subcontractor, major supplier and manufacturer; identify pertinent Drawing sheet and detail number, and Specification Section number, as appropriate.

1. Clearly identify in writing any variations or deviations from Construction Documents. Submit required product or system simultaneously with request, to ensure no time is lost if deviation/variation is not approved.

2. Indicate if submittal is a re-submittal.

3. Submit initial progress schedules and schedule of values in duplicate within ten (10) days after date established in Notice to Proceed. Consultant/Engineer will review and return schedules to Contractor within ten (10) days. If required, revise and resubmit within seven (7) days.

E. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.

F. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified: all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto, all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and all information relative to CONTRACTOR’s sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.

G. SUBMIT ALL SHOP DRAWINGS, PRODUCT DATA AND SAMPLES WITHIN FOURTEEN (14) DAYS OF THE DATE OF COMENCEMENT. Consultant/Engineer will review and return submittals to Contractor within ten (10) days. Revise and resubmit as required, within seven (7) days, identifying changes made since previous submittal.

1. Notify Consultant/Engineer in writing, at time of submission, of any deviations in submittals from requirements of the Construction Documents.

2. Begin no fabrication or work, which requires submittals until return of submittals stamped "No Exceptions Taken" by Consultant/Engineer.
H. Distribute copies of reviewed submittals stamped "No Exceptions Taken" by Consultant/Engineer to the Owner, job site file, subcontractors, and other concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

1.04 CONSTRUCTION PROJECT SCHEDULE AND WEEKLY PROGRESS SCHEDULES

A. Submit a schedule of intended construction sequence.

1. Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities. Show projected percentage of completion for each item of Work as of time of each Application for Progress Payment.

2. Show submittal dates required for shop drawings, product data, and samples, and product delivery dates, including those furnished by Owner and those under Allowances.

3. Show submittal dates required for shop drawings, product data, and samples, and product delivery dates, including those furnished by Owner.

4. Incorporate any selected alternates by Owner as line items.

5. Provide updated schedule for review on a weekly basis.

6. Submit revised schedules with each Application for Payment, reflecting changes since previous submittal and include any inclement weather or lost days.

B. Provide a format for email of progress schedule to be provided each week by 8 AM on Friday. Schedule to include summary of the previous 7 days and the planned work for the next 7 days.

C. Adhere to Section 01 32 03, Project Schedule.

1.05 SCHEDULE OF VALUES

A. Submit typed schedule on 8 ½ x 11-inch paper; Contractor’s standard form, AIA G703 or media-driven printout will be considered on request.

1. Identify schedule with:

a. Title of Project and Location.

b. Owner and Project Number.

c. Name and Address of Contractor.

d. Contract Designation.

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

1.06 PROJECT DOCUMENTATION OF EXISTING CONDITIONS
   A. Submit a CD or flash drive of photographs/videos documenting all existing conditions to this property and the adjoining/adjacent properties.
      1. Interior (leaks, stains, damaged ceiling tiles, paint, carpet, etc.).
      2. Exterior (landscaping, asphalt pavements, concrete surfaces, exterior wall conditions, lightning, security cameras, etc.).
   B. It is the Contractor’s responsibility to document existing conditions prior to commencing work. The burden of proof on prior conditions shall be the Contractor’s.

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

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

1.09 MANUFACTURER'S INSTRUCTIONS/CERTIFICATES
   A. When required in individual Specification Section, submit manufacturer's printed instructions for delivery, storage, assembly, installation, adjusting, and finishing in quantities specified for product data.
   B. Manufacturer’s instructions and requirements shall not take precedence of contract specifications and drawings unless specific approval is requested and approved prior to actual construction.
1.10 SAMPLES

A. Submit full range of manufacturer's standard colors, textures, and patterns for Consultant/Engineer's selection and approval by the Owner.

B. Submit samples to illustrate functional characteristics of the product, with integral parts and attachment devices.

C. Coordinate submittal of different categories for interfacing work.

D. Include identification on each sample, giving full information.

E. Submit the number of samples specified in each respective Specification section; Consultant/Engineer will retain one.

F. Reviewed samples, which may be used in the Work, are indicated in the Specification Section.

1.11 MOCK-UPS

A. Contractor shall complete a mock-up and/or an initial repair area for each major scope item for review and approval of Consultant/Engineer and Owner.

B. Location shall be pre-selected and approved by Consultant/Engineer and Owner.

C. Mock-up shall be of an actual condition(s) on the facility and shall indicate and show materials, methods and quality of application.

D. Mock-up shall also be reviewed for acceptability of the aesthetic conditions of the work.

1.12 Safety Data Sheets (SDS):

A. Submit Safety Data Sheets with each specification section and include with Safety Plan in accordance with Section 01 52 05, Safety Requirements.

B. Provide Safety Data Sheets for all materials being installed or used.

C. Keep SDS sheets at site at all times during project.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 33 00
Application and Certificate for Payment

TO OWNER: The Medical University of South Carolina Engineering and Facilities
97 Jonathan Lucas Street MSC 190
Charleston, SC 29425-1900

FROM
CONTRACTOR:

PROJECT: Parking Garage#1 Structural, Waterproofing, Masonry Repairs

VIA
ARCHITECT:
ADC Engineering, Inc.
1226 Yeaman's Hall Road
Hanahan, SC 29410

APPLICATION NO: ____________________________
PERIOD TO: ____________________________
CONTRACT FOR: ____________________________
CONTRACT DATE: ____________________________
PROJECT NO: Owner Project Number: H51-9831-PG
ADC Project Number: 16202

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

CONTRACTOR'S APPLICATION FOR PAYMENT

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

1. ORIGINAL CONTRACT SUM ........................................... $

2. NET CHANGE BY CHANGE ORDERS ................................... $ 0.00

3. CONTRACT SUM TO DATE (Line 1 ± 2) ................................... $ 0.00

4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) ........... $

5. RETAINAGE:
   a. 0% of Completed Work
      (Column D + E on G703) ........................................... $ 0.00
   b. 0% of Stored Material
      (Column F on G703) ........................................... $ 0.00

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

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

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

8. CURRENT PAYMENT DUE ........................................... $ 0.00

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

CHANGE ORDER SUMMARY

<table>
<thead>
<tr>
<th>ADDITIONS</th>
<th>DEDUCTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total changes approved in previous months by Owner</td>
<td>$</td>
</tr>
<tr>
<td>Total approved this Month</td>
<td>$</td>
</tr>
<tr>
<td>TOTALS</td>
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NET CHANGES by Change Order $ 0.00

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

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

ARCHITECT'S CERTIFICATE FOR PAYMENT

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

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

ARCHITECT:
By: ____________________________ Date: ____________________________

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


In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION OF WORK</th>
<th>SCHEDULED VALUE</th>
<th>WORK COMPLETED</th>
<th>MATERIALS PRESENTLY STORED (NOT IN D OR E)</th>
<th>TOTAL COMPLETED AND STORED TO DATE (D+E+F)</th>
<th>% (G/C)</th>
<th>BALANCE TO FINISH (C-G)</th>
<th>RETAINAGE (IF VARIABLE RATE)</th>
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**GRAND TOTAL**

|              | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**APPLICATION NO:**

**APPLICATION DATE:**

**PERIOD TO:**

**ARCHITECT’S PROJECT NO:**

**Owner Project Number:** H51-9831-PG

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**User Notes:**

(1464872806)
required submittals list

Project Title: PG 1 Structural, Waterproofing & Masonry Repairs
Owner Project No.: H51-9831-PG
ADC Project No.: 16202
Reviewer(s): __________________________ Date: __________________________
ADC Engineering, Inc.

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

☐ 01 32 03  Project Schedules
   1.04  B.  Project Schedule
   C.  Weekly Progress Schedule

☐ 01 33 00  Submittals
   1.04  A.  Construction Project Schedule and Weekly Progress Schedules
   1.05  A.  Schedule of Values
   1.06  A.  Project Documentation of Existing Conditions
   1.12  A.  SDS

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

☐ 02 04 03  Cutting and Patching for Building Envelope
   1.05  C.  Proposals for Cutting and Patching

☐ 02 05 03  Demolition and Removal for Building Envelope
   1.05  C.  Demolition Plan

☐ 03 30 00  Cast-In-Place Concrete
   1.4  A.  Product Data
   B.  Design Mixes
   C.  Shop Drawings
   D.  Material Certificates
03 90 03  Concrete Restoration for Deck
   1.04  C.  Product Data, mixing and application instructions
   D.  Product Data, compliance
   E.  Samples
   F.  SDS

04 20 00  Unit Masonry
   1.3  A.  Product Data
   B.  Samples for Verification
   C.  Material Test Reports
   D.  Material Certificate
   E.  Cold-Weather Procedures

04 50 03  Select Masonry Replacement, Restoration and Cleaning
   1.05  C.  Shop Drawings
   D.  Product Data
   E.  Samples
   F.  Manufacturer's Installation Instructions
   G.  SDS

05 12 00  Structural Steel
   1.04  B.  Product Data
   C.  Shop Drawings
   D.  Manufacturer's Certificate of Compliance Bolts Nuts Washers
   E.  Manufacturer's Certificate of Compliance Weld Filler Material
   F.  Qualification Data

07 14 03  Concrete Deck Coating for Vehicular Traffic
   1.04  C.  Shop Drawings
   D.  Product Data
   E.  Manufacturer's Installation Instructions
   F.  Applicator
   G.  Information Card
   H.  SDS

07 42 13.04  Metal Wall Panels Perforated
   1.08  A.  Product Data
   B1.  Credit MR4.1 Product Data
   C.  Shop Drawings
   D.  Samples for Initial Selection
   E.  Samples for Verification
   1.09  A.  Warranty
   1.10  A.  Maintenance Data
07 60 03  Sheet Metal for Building Envelope
1.04  C.  Drawings
   D.  Samples
   E.  Color Samples
   F.  SDS

07 91 03  Prefabricated Parking Garage Joints
1.04  C.  Shop Drawings
   D.  Product Data
   E.  Manufacturer's Installation Instructions
   F.  Applicator

07 92 03  Sealants for Building Envelope
1.04  C.  Manufacturer's Catalog Data
   D.  Manufacturer's Standard Color Chart
   E.  Manufacturer's Instructions
   F.  Samples
   G.  Sample Installations – Mock-Ups
   H.  Certificates of Compliance or SWRI Validation Program
   I.  SDS

09 96 00  High Performance Coatings
1.5  A.  Protective Coating Samples
   B.  Mockup
   C.  Coatings Material List
   D.  Material Certificates
   E.  Close-Out Submittals.

32 17 23  Pavement Markings
1.03  C.  Product Data
   D.  Composition Requirements
   E.  Qualifications
   F.  Certificates

End of Required Submittal List
PART 1 - GENERAL

1.01 SUMMARY

A. Contractor has full and complete responsibility for the quality control of this project. Contractor shall coordinate and control their subcontractors, their work and the materials and equipment they use.

B. Quality assurance services are provided by the Owner, his representatives and the Third Party Firms for the Owner’s exclusive benefit. Within this Contract, the Contractor shall provide scheduling, coordination and written responses to all quality assurance and third party inspection services.

C. The Contractor is required to provide complete and full access for the Owner and the Owner’s Representative to complete Quality Assurance Services.

1.02 RELATED REQUIREMENTS

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

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

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

D. Technical Specifications and Drawings.

1.03 QUALITY CONTROL OF INSTALLATION

A. Contractor to maintain daily log of ongoing punch list items based on daily quality control inspections.

B. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

C. Comply fully with manufacturers' instructions, including each step in sequence.

D. Should manufacturers' instructions conflict with Construction Documents, request clarification from Consultant/Engineer before proceeding.

E. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
F. Perform work by persons qualified to produce workmanship of specified quality.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.04 REFERENCES

A. The publications listed in each specification section form a part of this specification to the extent referenced, and to provide clarifications for any issues not covered within this specification or for contractor’s benefit or clarification.

B. Conform to reference standard by date of issue current on date of Construction Documents.

C. Obtain copies of standards when required by Construction Documents.

D. Should specified reference standards conflict with Construction Documents, request clarification for Consultant/Engineer before proceeding.

E. The contractual relationship of the parties to the Contract shall not be altered from the Construction Documents by mention or inference otherwise in any reference document.

1.05 FIELD SAMPLES

A. Install field samples at the site as required by individual specifications sections for review.

B. Acceptable samples represent a quality level for the work.

C. Where field sample is specified in individual sections to be removed, clear area after Consultant/Engineer has accepted field sample.

1.06 MOCK-UP

A. Any required or specified tests will be performed under provisions identified in this section.

B. Assemble and erect specified items, with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Where mock-up is specified in individual sections to be removed, clear area after Consultant/Engineer has accepted mock-up.

1.07 INSPECTION AND TESTING LABORATORY SERVICES

A. Owner may appoint, employ, and pay for services of an independent firm to perform inspection and testing, unless otherwise required in Construction Documents.

B. Reports will be submitted by the firm to the Consultant/Engineer, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Construction Documents.
C. Contractor shall provide access and coordination with firm.

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

1.08 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. Submit qualifications of observer to Owner and Consultant/Engineer five (5) days in advance of required observations.

B. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, warranty inspection as applicable, and to initiate instructions when necessary.

C. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

D. Schedule site visit a minimum of three (3) days in advance, and submit report in duplicate within three (3) days of visit to Owner and Consultant/Engineer for review.

1.09 UNIT PRICED QUANTITIES

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

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

C. Provide photograph or videotape documentation of repairs.

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

E. Provide actual used quantities on each Application for Payment request.
PART 2 - PRODUCTS
Not Used.

PART 3 - EXECUTION
Not Used.

END OF SECTION 01 45 00
SECTION 01 50 00
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

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

1.02 RELATED REQUIREMENTS
A. The provisions of the Instructions to Bidders, General Conditions, and Supplementary Conditions of these specifications shall govern work under this section.
B. The attention of the contractor and the subcontractor of this section is directed to the Instructions to Bidders concerning substitution of materials and equipment.
C. Section 01 11 00: Summary of Work: Contractor use of premises.
D. Section 01 77 00: Contract Close-Out: Final Cleaning

E. Technical Specifications and Drawings

1.03 CHARCOAL FILTERS AT AIR INTAKES

A. When working with solvents, cleaners or adhesives, provide a filter medium with activated charcoal at all air intakes and other roof and wall openings.

1. Place 2 layers of charcoal filter over all air intakes and other roof and wall openings and secure in place.

2. Monitor, remove and replace as need to maintain performance and ensure mechanical systems are unaffected.

B. “Sniff” Test

1. Prior to beginning of the roof application, contact Owner/Occupants to ensure odors are not entering the building (first day start-up).

C. Keep all adhesives away from intakes. When adhesives are being used at intakes, shield with ‘boxes’ and use fans. At VTRs/pipe penetrations, temporarily extend heights using PVC pipes or similar material.

1.04 LANDSCAPE/PAVING PROTECTION OF ADJACENT SURFACES

A. Carefully protect trees, shrubbery, grass, concrete, walkways and asphalt surfaces during the course of the project.

B. Damaged trees and shrubbery will require replacement with new, of equal size/age at no cost to the Owner.

C. Return grass to its original condition.

D. Ensure construction sequence protects the facility, grass, grounds, concrete, walkways and asphalt pavement surfaces.

E. Provide protection for concrete, asphalt and other finished surfaces adjacent to work areas.

1.05 BUILDING ENVELOPE

A. Provide protection to all building envelope surfaces (roofs, walls, fenestrations, landscaping, etc.).

B. Cover roof with plywood, or other approved material, in area of work (i.e. path of traffic, scaffolding, etc.).

C. Clean work area and keep all horizontal surfaces (roof and grade) free of construction debris daily.
D. Report damages immediately. Contractor is required to have proper repairs made within 7 days of occurrence. However, temporary repairs shall be immediate and maintained until proper, long-term repairs are made. Owner and Consultant/Engineer must approve of repair technique to be used.

E. Minimize traffic over roof and completed work.

1.06 COORDINATION OF SPACE

A. Owner and Consultant/Engineer shall determine actual laydown areas, storage areas, and extent of work site.

B. No personally owned vehicles allowed at site.

1.07 ELECTRICITY AND LIGHTING

A. Provide service required for construction operations through existing building service. Owner will provide electricity at the source. Contractor must provide access to that source. The method of access must be approved by Owner and conform to all applicable electrical and building codes. All temporary electrical wiring must be provided with proper conduit protection. The Owner must approve the path of the access.

B. Permanent lighting may be used during construction. Maintain lighting and make routine repairs.

C. Return all services to their original condition.

1.08 TELEPHONE SERVICE

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

1.09 WATER

A. Provide service required for construction operations from existing building systems. Extend branch piping with outlets located so that water is available by use of hoses.

B. Return all services to their original condition.

1.10 SANITARY FACILITIES

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

1.11 BARRIERS

A. Provide as required to prevent public entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
B. Provide six (6) foot high fence around construction laydown area with locks, or provide secure trailer at site. (Construction: Commercial grade chain link fence.)

C. Provide barriers around trees and plants designated to remain. Protect against vehicular traffic, stored materials, dumping, chemically injurious materials, and puddling or continuous running water.

1.12 PROTECTION OF INSTALLED WORK

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

B. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings. Protect finished surface from traffic, movement of heavy objects, and storage.

C. Prohibit traffic and storage on newly installed work surfaces, on sidewalks, roads and landscaped areas.

1.13 CLEANING DURING CONSTRUCTION

A. Control accumulation of waste materials and rubbish; periodically dispose of off-site.

B. Clean site daily.

1.14 FIELD OFFICES, SHEDS AND TRAILERS

A. Office: Not required.

B. Storage Sheds for Tools, Materials, and Equipment: Weather-tight, with adequate space for organized storage and access, and lighting for inspection of stored materials.

1.15 DEMOBILIZATION

A. Remove temporary protection, materials, equipment, services, and construction prior to Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary facilities. As a minimum, remove spills to a depth of 2 feet beyond the contaminant. Restore existing facilities used during construction to specify, or to original, condition.

1.16 GENERAL SAFETY

A. Protection and safety of occupants, visitors, workmen, and building and grounds is of vital importance. Take precautions to ensure a safe work area.

B. Conduct work in accordance with applicable federal, state, and local regulations governing safety and safe work practices.
C. Ingress/Egress: Provide necessary protection for pedestrians, occupants and visitors related to this project.

D. If a hurricane is projected for project site location, properly protect and secure all elements of the facility.

1.17 SECURITY

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

1.18 IDENTIFICATION OF CONTRACTOR PERSONNEL

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

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 50 00
PART 1 - GENERAL

1.01 SUMMARY

A. Noise, vibration, impact, fumes, heat and moisture related to the scope of this work must be coordinated and scheduled as to not affect the operation and function of these facilities.

1. See Section 01 50 00, Construction Facilities and Temporary Controls for fumes/odor requirements.

B. This facility will remain functional during construction. All necessary safety measures shall be provided to protect occupants, pedestrians and individuals in the surrounding areas potentially affected by this work.

1. This includes access to entrances, thoroughfare locations and adjacent facilities.

C. This section includes all necessary procedures to accomplish the work within these Construction Documents to the extent applicable to accomplish the scope of this project.

D. Ensure means and methods ensure the facilities components are stabilized, shored and protected during demolition and construction.

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

F. Any applicable requirements for this section may be submitted with the “Demolition Plan” of Section 02 05 03, Demolition and Removal for Building Envelope.

G. Contractor shall adhere to local, state and federal requirements including SCDHEC and OSHA.

H. Basis for several requirements in this section is COE EM-385-1-1.

I. Safety Plans should include an SDS list of all products being used as part of a system, but also including substances being used to complete the work (i.e. fuels, solvents, cleaners, etc.). This data should be included within the submittal, and a copy kept on the site.

1. SDS sheets are required for all products/materials used for this project. Any products with strong or distinct odors must be identified prior to use and submitted to Consultant/Engineer for review and approval.
1.02 RELATED REQUIREMENTS

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

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

C. Technical Specifications and Drawings

1.03 REFERENCES

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

B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
   2. ANSI Z359.1 (Latest Edition) Safety Requirements for Personal Fall Arrest Systems

C. ASME INTERNATIONAL (ASME):
   1. ASME B30.5 (Latest Edition) Mobile Cranes
   2. ASME B30.22 (Latest Edition) Articulating Boom Cranes

D. INTERNATIONAL CODE COUNCIL (ICC):

E. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):
   1. NFPA 10 (Latest Edition) Portable Fire Extinguishers
F. OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION:
   1. 29 CFR 1926 – Safety and Health Regulations for Construction

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

H. U.S. ARMY CORPS OF ENGINEERS (USACE):

1.04 DEFINITIONS

A. Competent Person. A competent person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

B. Confined Space. A space which, by design, has limited openings for entry and exit, unfavorable natural ventilation which could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy. Confined spaces include, but are not limited to storage tanks, process vessels, pits, silos, vats, degreasers, reaction vessels, boilers, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, and pipelines.

C. First Aid. First aid is any one-time treatment, and any follow-up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care, even though provided by a physician or registered professional personnel.

D. Health and Safety Plan (HASP). The HASP is the equivalent term of SHP or SSHP used in COE EM-385-1-1.

E. Lost Workdays. The number of days (consecutive or not) after, but not including, the day of injury or illness during which the employee would have worked but could not do so; that is, could not perform all or part of his normal assignment during all or any part of the workday or shift; because of the occupational injury or illness.

F. Medical Treatment. Medical treatment includes treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even though provided by a physician or registered personnel.

G. Multi-employer work site (MEWS). A multi-employer work site, as defined by OSHA, is one in which many employers occupy the same site. The Owner
considers the general contractor to be the "controlling authority" for all work site safety and health of the subcontractors.

H. Operating Envelope. There is an "operating envelope" around any crane, and inside the envelope are the operator, riggers, rigging gear between the hook and the load, the load and the crane's supporting structure (ground, rail, etc.).

I. Qualified Person. One who, by possession of a recognized degree, certificate, or professional standing, or extensive knowledge, training, and experience, has successfully demonstrated his or her ability to solve or resolve problems related to the subject matter, the work or the project.

J. Recordable Occupational Injuries or Illnesses. Any occupational injuries or illnesses which result in:

1. Fatalities, regardless of the time between the injury and death, or the length of the illness; or
2. Lost Workday Cases, other than fatalities, that result in lost workdays, or
3. Non-Fatal Cases without lost workdays, which result in transfer to another job or termination of employment, or require medical treatment (other than first aid) or involve: loss of consciousness or restriction of work or motion. This category also includes any diagnosed occupational illnesses, which are reported to the employer but are not classified as facilities or lost workday cases.

K. Safety Specialist. The superintendent or other qualified or competent person who is responsible for the on-site safety required for the project. Serious Accidents. Any work-related incident, which results in, a fatality, in-patient hospitalization of three or more employees, or property damage in excess of $200,000.

L. Significant Accident. Any contractor accident which involves falls of (4 feet) or more, electrical accidents, confined space accidents, diving accidents, equipment accidents, crane accident or fire accidents, which, result in property damage of $10,000 or more, but less than $200,000; or when fire department or emergency medical treatment (EMT) assistance is required.

M. Weight Handling Equipment (WHE) Accident. A WHE accident occurs when any one or more of the six elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; and collision, including unplanned contact between the load, crane, and/or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, roll over, etc.).
1.05 SUBMITTALS

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

B. Plans

1. Accident Prevention Plan (APP) ; G

2. Health and Safety Plan (HASP) ; G

   a. Safety Plans should include an SDS list of all products being used as part of a system, but also including substances being used to complete the work (i.e. fuels, solvents, cleaners, etc.). This data should be included within the submittal, and a copy kept on the site.

C. Reports

1. Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."

2. Crane Reports, if used.

3. Crane Critical Lift Plan, if used.

1.06 QUALITY ASSURANCE

A. Safety Specialist

1. Qualifications

   a. Qualifications of Safety Specialist:

      1) Ability to manage the on-site contractor safety program through appropriate management controls.

      2) Ability to identify hazards and have the capability to expend resources necessary to abate the hazards.

      3) Must have worked on similar types of projects that are equal to or exceed the scope of the project assigned with the same responsibilities.

      4) Shall, as a minimum, have attended an OSHA training qualification class including at least 10 hours of classroom instruction.
b. Qualifications of Qualified Person, Confined Space Entry. The qualified person shall be capable (by education and specialized training) of anticipating, recognizing, and evaluating employee exposure to hazardous substances or other unsafe conditions in a confined space. This person shall be capable of specifying necessary control and protective action to ensure worker safety.

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

B. Meetings

1. Preconstruction Conference
   a. The Safety Specialist shall attend the preconstruction conference.

C. Meeting on Work Procedures

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

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

D. Weekly Safety Meetings

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

E. Work Phase Meetings

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

F. New Employee Indocitrination

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

G. Plans

1. Accident Prevention Plan (APP)
   a. Submit the APP at least 15 calendar days prior to start of work at the job site, following Appendix A of COE EM-385-1-1. Make the APP site specific.
H. Health and Safety Plan (HASP)

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

I. Reports

1. Crane Reports, if used.
   a. Submit crane inspection reports required in accordance with COE EM-385-1-1 and as specified herein with Daily Reports of Inspections.

2. Crane Critical Lift Plan, if used.
   a. Submit crane critical lift plan COE EM-385-1-1 section 16 when crane loads meet or exceed 75 percent of the crane load capacity in any configuration.

J. Certificate of Compliance

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

1.07 Accident Prevention Plan (APP)

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

B. Contents of the Accident Prevention Plan

1. Name and safety related qualifications of safety specialist (including training and any certifications).

2. Qualifications of competent and of qualified persons.

3. Identity of the individual who will complete exposure data (hours worked); accident investigations, reports and logs; and immediate notification of accidents to include subcontractors.
4. Emergency response plan. Conform to COE EM-385-1-1, paragraph 01.E and include a map denoting the route to the nearest emergency care facility with emergency phone numbers. Contractor may be required to demonstrate emergency response.

5. Confined Space Entry Plan. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

6. Hazardous Material Use. Provisions to deal with hazardous materials, pursuant to the Contract shall include the following as applicable:
   a. Inventory of hazardous materials to be introduced to the site with estimated quantities.
   b. Plan for protecting personnel and property during the transport, storage and use of the materials.
   c. Emergency procedures for spill response and disposal, including a site map with approximate quantities on site at any given time. The site map will be attached to the inventory, showing where the hazardous substances are stored.
   d. Safety Data Sheets for inventoried materials not required in other section of this specification.
   e. Labeling system to identify contents on all containers on-site.
   f. Plan for communicating high health hazards to employees and adjacent occupants.

7. Critical Lift Plan. Weight handling critical lift plans shall be prepared and signed in accordance with COE EM-385-1-1, paragraph 16.H.02.

8. Alcohol and Drug Abuse Plan

9. Describe plan for random checks and testing with pre-employment screening in accordance with state requirements.

10. Description of the on-site prevention program
    a. Fall Protection and Prevention (FP&P) Plan. The plan shall be site specific and address all fall hazards in the work place. It shall address
how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 6 feet. A qualified person shall prepare the plan. The plan shall include fall protection and prevention systems, equipment and methods employed, responsibilities, rescue and escape equipment and operations, training requirements, and monitoring methods. FP&P Plan shall be revised once every six months for lengthy projects, to reflect any new changes during the course of construction, due to changes of personnel, equipment, systems or work habits.

b. Silica Exposure Reduction. The plan shall include specific procedures to prevent employee silica inhalation exposures.

c. Section 02 04 03, Cutting and Patching for Building Envelope.

d. Section 02 05 03, Demolition and Removal for Building Envelope.

e. Training Records and Requirements. List of mandatory training and certifications which are applicable to this project (e.g. explosive actuated tools, confined space entry, fall protection, crane operation, vehicle operator, forklift operators, personal protective equipment); list of requirements for periodic retraining/certification; outline requirements for supervisory and employee safety meetings.

f. Severe Weather Plan. Procedures of ceasing on-site operations during lightning or upon reaching maximum allowed wind velocities.

g. Barricades, signage and protective walkways.

1.08 ACTIVITY HAZARD ANALYSIS (AHA)

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

1.09 HEALTH AND SAFETY PLAN (HASP)

A. Prepare as required by 29 CFR 1910.120 and COE EM-385-1-1.
B. Qualified Personnel

1. Use a person with sufficient training and experience to prepare the HASP, conduct activity hazard analyses, and prepare detailed plan for demolition, removal, and disposal of materials.

C. Contents

1. In addition to the requirements of COE EM-385-1-1, Table 28-1, the HASP must include:

2. Location, size, and details of control areas.

3. Location and details of decontamination systems.

4. Interface of trades involved in the construction.

5. Sequencing of work.

6. Disposal plan.

7. Sampling protocols.

8. Testing labs.

9. Protective equipment.

10. Pollution control.


12. Training and certifications of CIH, CSP or other competent persons.

1.10 DRUG PREVENTION PROGRAM

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

1.11 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

A. Scaffolds

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

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

1.12 DUTIES OF THE SAFETY SPECIALIST

A. Ensure construction hazards are identified and corrected.

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

C. Maintain a log of safety inspections performed.

D. Attend the pre-construction conference as required.

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

1.13 DISPLAY OF SAFETY INFORMATION

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

1. Map denoting the route to the nearest emergency care facility with emergency phone numbers.

2. AHA

3. Confined space entry permit.

4. A sign indicating the number of hours worked since last lost workday accident.

1.14 SITE SAFETY REFERENCE MATERIALS

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

1.15 EMERGENCY MEDICAL TREATMENT

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

A. Accident Reports

1. For recordable occupational injuries and illnesses, the general contractor shall conduct an accident investigation to establish the root cause(s) of the accident and notify the owner.

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

B. Notification

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

C. OSHA Citations and Violations

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

D. Crane Notification

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

PART 2 - PRODUCTS

2.01 FALL PROTECTION ANCHORAGE

A. Fall protection anchorage used during construction shall be completely removed.

B. Any existing forms of fall protection shall be reviewed by the Contractor for compliance to authorities noted herein and shall become the responsibility of the Contractor.
2.02 CONFINED SPACE SIGNAGE

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

PART 3 - EXECUTION

3.01 CONSTRUCTION

A. Comply with COE EM-385-1-1, NFPA 241, the accident prevention plan, the activity hazard analysis and other related submittals and activity fire and safety regulations.

B. Hazardous Material Exclusions

1. Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocynates, lead-based paint are prohibited. Owner may consider exceptions to the use of any of the above excluded materials upon written request by Contractor.

C. Unforeseen Hazardous Material

1. If additional material (such as PCB, lead paint, and friable and non-friable asbestos), is indicated that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Owner immediately.

3.02 PERSONNEL PROTECTION

A. Fall Protection

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

B. Personal Fall Arrest Device

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

C. Fall Protection for Roofing Work

1. Fall protection controls shall be implemented based on the type of roof being constructed and work being performed. The roof area to be accessed shall be evaluated for its structural integrity including weight-bearing capabilities for the projected loading.

   a. Low Sloped Roofs:

      1) For work within six (6) feet of an edge, on low-slope roofs, personnel shall be protected from falling by use of personal fall arrest systems, guardrails, safety nets or other OSHA approved methods.

      2) For work greater than six (6) feet from an edge, warning lines shall be erected and installed in accordance with 29 CFR 1926.502(f).

      3) Steep Roofs: Work on steep roofs requires personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction.

D. Safety Nets

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

E. Existing Anchorage

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

3.03 SCAFFOLDING

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

3.04 BARRICADES, SIGNAGE AND PROTECTIVE WALKWAYS

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

3.05 EQUIPMENT

A. Material Handling Equipment

1. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.

2. The use of hooks on equipment for lifting of material must be in accordance with manufacturers printed instructions.

B. Weight Handling Equipment

1. Cranes must be equipped with:

   a. Load Indicating Devices (LIDs) and a Boom Angle or Radius Indicator,

   b. or Load-Moment Indicating Devices (LMIs).

   c. Anti-two-block prevention devices.

   d. Boom Hoist Hydraulic Relief Valve, Disconnect, or Shutoff (stops hoist when boom reaches a predetermined high angle).

   e. Boom Length Indicator (for telescoping booms).
f. Device to prevent uncontrolled lowering of a telescoping hydraulic boom.

g. Device to prevent uncontrolled retraction of a telescoping hydraulic boom.

2. The Contractor shall notify the Owner, in advance, of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated.

3. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person (as defined in ASME B30.5). All testing shall be performed in accordance with the manufacturers recommended procedures.

   a. The Contractor shall comply with ASME B30.5 for mobile cranes and ASME B30.22 for articulating boom cranes.

4. Each load shall be rigged/attached independently to the hook/master-link in such a fashion that the load cannot slide or otherwise become detached. Christmas-tree lifting (multiple rigged materials) is not allowed.

5. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall follow the requirements of ASME B30.5 or ASME B30.22 as applicable.

6. Crane supported work platforms shall only be used in extreme conditions if the Contractor proves that using any other access to the work location would provide a greater hazard to the workers. Personnel shall not be lifted with a live hoist or friction crane.

7. A fire extinguisher having a minimum rating of 10BC and a minimum nominal capacity of 5lb of extinguishing agent shall be available at all operator stations or cabs of cranes. Portable fire extinguishers shall be inspected, maintained, and recharged as specified in NFPA 10, Standard for Portable Fire Extinguishers.

8. All employees shall be kept clear of loads about to be lifted and of suspended loads.

9. A weight handling equipment operator shall not leave his position at the controls while a load is suspended.

10. A Contractor Crane Operation Checklist shall be used by the contractor’s representative during oversight of contractor crane operations (refer to COE EM-385-1-1 Appendix H).

12. Cribbing shall be utilized by the Contractor when performing lifts on outriggers.

13. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

14. A physical barricade must be positioned to prevent personnel from entering the tailswing area of the crane.

15. A substantial and durable rating chart containing legible letters and figures shall be provided with each crane and securely mounted onto the crane cab in a location allowing easy reading by the operator while seated in the control station.

16. Certification records which include the date of inspection, signature of the person performing the inspection along with the serial number or other identifier of the crane which was inspected. This record will always be available for review by owner personnel.

17. Written reports listing the load test procedures utilized along with any repairs or alterations performed on the crane will be available for review by the owner personnel.

18. Contractor shall certify that all of the crane operators have been trained not to bypass safety devices (e.g. anti-two block devices) during lifting operations.

3.06 ELECTRICAL

A. Conduct of Electrical Work

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

B. Portable Extension Cords

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

3.07 WORK IN CONFINED SPACES

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

1. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 06.I.05 of COE EM-385-1-1 for entry procedures.) All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.

2. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained.

3. Ensure the use of rescue and retrieval devices in confined spaces greater than 5 feet in depth. Conform to Sections 06.I.09, 06.I.10 and 06.I.11 of COE EM-385-1-1.

4. Include training information for employees who will be involved as entrant attendants for the work. Conform to Section 06.I.06 of COE EM-385-1-1.

3.08 HOUSEKEEPING

A. Clean-up

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

B. Dust Control

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

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

3.10 FIELD QUALITY CONTROL

A. Inspections

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

3.11 FLAMMABLE AND COMBUSTIBLE LIQUID HANDLING AND STORAGE

A. Safety Gas Containers

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

3.12 ASPHALT KETTLES

A. Transporting

1. Asphalt (tar) kettles shall not be transported over any highway, road or street when the heat source for the kettle is operating. Exception: Asphalt (tar) kettles in the process of patching road surfaces.

B. Location

1. Asphalt (tar) kettles shall not be located within 20 feet of any combustible material, combustible building surface or any building opening and within a controlled area identified by the use of traffic cones, barriers or other approved means. Asphalt (tar) kettles and pots shall not be utilized inside or on the roof of a building or structure. Roofing kettles and operating asphalt (tar) kettles shall not block means of egress, gates, roadways or entrances.

C. Location of fuel containers

1. Fuel containers shall be located at least 10 feet from the burner. Exception: Containers properly insulated from heat or flame are allowed to be within 2 feet of the burner.
D. Attendant

1. An operating kettle shall be attended by a minimum of one employee knowledgeable of the operations and hazards. The employee shall be within 100 feet of the kettle and have the kettle within sight. Ladders or similar obstacles shall not form a part of the route between the attendant and the kettle.

E. Fire extinguishers

1. There shall be a portable fire extinguisher complying with Section 906 and with a minimum 40-B:C rating within 25 feet of each asphalt (tar) kettle during the period such kettle is being utilized. Additionally, there shall be one portable fire extinguisher with a minimum 3-A:40-B:C rating on the roof being covered.

F. Lids

1. Asphalt (tar) kettles shall be equipped with tight-fitting lids.

G. Hi-boys

1. Hi-boys shall be constructed of noncombustible materials. Hi-boys shall be limited to a capacity of 55 gallons. Fuel sources or heating elements shall not be allowed as part of a hi-boy.

H. Roofing kettles.

1. Roofing kettles shall be constructed of noncombustible materials.

I. Fuel containers under air pressure

1. Fuel containers that operate under air pressure shall not exceed 20 gallons in capacity and shall be approved.

END OF SECTION 01 52 05
SECTION 01 60 00
MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

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

1.02 RELATED REQUIREMENTS

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

1.03 PRODUCTS

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

1.04 TRANSPORTATION AND HANDLING

A. Transport products by methods to avoid product damage; deliver in undamaged
condition in manufacturer's unopened containers or packaging, dry.
B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.

C. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

1.05 STORAGE AND PROTECTION

A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions. See applicable technical specification sections.

B. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.

C. Arrange storage to provide access for inspection. Periodically inspect to ensure products are undamaged, and are maintained under required conditions.

D. Store all equipment and materials on site in a trailer and secure at end of each day's construction.

1.06 PRODUCT OPTIONS (PRIOR TO BID)

A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards.

B. Products Specified by Naming One or More Manufacturers: Submit a request for substitution for any manufacturer not specifically named.

C. Products Specified by Naming Only One Manufacturer: No options, no substitutions allowed.

1.07 VARIATIONS (AFTER CONTRACT AWARD)

A. Variation Consideration: After Contract has been executed, Owner will consider a formal request for variation (or deviation) of minor products, systems or criteria as field conditions justify, only for the benefit of the owner under the following conditions:

1. Extended delivery time would seriously delay completion of project, or specified item is no longer available, or for unforeseen reasons beyond control of Contractor.

2. Request is accompanied by complete data on proposed variation substantiating compliance with Construction Documents including product identification and description, performance and test data, references and samples where applicable, and an itemized comparison of proposed variation with products
specified or named by Addenda, with data relating to Contract time schedule, design and artistic effect where applicable and its relationship to separate contracts.

3. Request is accompanied by accurate cost data on proposed variation in comparison with product specified, whether or not modification of Contract Sum is to be a consideration.

B. Contractor Representations: Request for substitutions based on above, when forwarded by Contractor to Consultant/Engineer, are understood to mean that Contractor:

1. Represents that he has personally investigated proposed substitute product and determined that it is equal or superior in all respects to that specified.

2. Will provide the same guarantee for substitution that he would for that specified.

3. Certifies that cost data presented is complete and includes all related costs under this Contract, but excludes costs under separate contracts and Consultant/Engineer's re-design costs, and that he waives all claims for additional costs related to substitution which subsequently become apparent.

4. Will coordinate installation of accepted substitute, making such changes as may be required for work to be complete in all respects.

C. Non-Consideration of Requests: Substitutions will not be considered if:

1. They are indicated or implied on shop drawing submissions without formal request required above.

2. For their implementation they require a substantial revision of Construction Documents in order to accommodate their use.

D. Approval, by Consultant/Engineer, of substitute materials and equipment shall not relieve Contractor from his responsibility to supply and install any additional materials, equipment or labor required to make substitution properly function within intent of Construction Documents, as issued for Bid, whether or not such additional materials, equipment or labor are shown on data submitted with request for approval and whether or not recognized by Consultant/Engineer or Contractor. Contractor shall supply and install such required additional material, equipment or labor solely at his own expense and at no additional cost to Owner.

1.08 SYSTEMS DEMONSTRATION

A. Prior to final inspection, demonstrate operation of each system to Consultant/Engineer and Owner.

B. Instruct Owner's personnel in operation, adjustment, and maintenance of equipment and systems, using the operation and maintenance data as the basis of instruction.
PART 2 - PRODUCTS
Not Used.

PART 3 - EXECUTION
Not Used.

END OF SECTION 01 60 00
substitution request form

**Project Title:** PG 1 Structural, Waterproofing & Masonry Repairs

**Owner Project No.:** H51-9831-PG

**ADC Project No.:** 16202

**Project Manager:** Mr. Richard L. Cook, Jr.  
**Email:** rickc@adcengineering.com

ADC Engineering, Inc.

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

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

<table>
<thead>
<tr>
<th>Specified Item</th>
<th>Proposed Substitution</th>
</tr>
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<tbody>
<tr>
<td><strong>Section:</strong></td>
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<td><strong>Paragraph:</strong></td>
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</tbody>
</table>

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

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

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

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

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

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

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

**SUBMITTED BY:**

**Signature**  
**Firm**  
**Date**

Notification of Accepted Substitutions prior to bid will be by Addendum

Substitution Request Form  
01 60 01-1  
16202
THIS PAGE IS FOR USE BY CONSULTANT/ ENGINEER

SUBSTITUTION REQUEST FORM REVIEW

Project Title: PG 1 Structural, Waterproofing & Masonry Repairs
Owner Project No.: H51-9831-PG
ADC Project No.: 16202
Project Manager: Mr. Richard L. Cook, Jr.  Email: rickc@adcengineering.com

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

_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

REVIEWED BY: ___________________________  ___________________________
   Signature      Date

Substitution Request Form
01 60 01-2
SECTION 01 77 00
CONTRACT CLOSE-OUT

PART 1 - GENERAL

1.01 SUMMARY

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

1.02 RELATED REQUIREMENTS

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

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

C. Section 01 11 00: Summary of Work.
D. Section 01 50 00: Construction Facilities and Temporary Controls: Cleaning during construction.
E. Section 01 77 05: Three-Year Contractor Warranty
F. Section 01 77 20: Certificate of Substantial Completion – AIA G704
G. Section 01 77 25: Contract Close-Out Check List
H. Technical Specifications and Drawings

1.03 CLOSE-OUT PROCEDURES

A. Provide all required Close-Out Documents, bound together as a single package and submit to ADC Engineering, Inc. in triplicate. Any Close-Out Document packages not adhering to this requirement will be returned to the Contractor.
B. All work and punchlist items must be complete to provide all required Close-Out Documents.

C. In accordance with Section 01 33 00, Submittals, the value for Close-Out Documents will be no less than $500.00.

D. Comply with procedures stated in General Conditions of the Contract for issuance of Certificate of Substantial Completion.

E. Owner will occupy project for the purpose of conduct of business, under provision stated in Certificate of Substantial Completion.

F. When Contractor considers work has reached final completion, submit required written certification that Construction Documents have been reviewed, work has been inspected, and that work is complete in accordance with Construction Documents and ready for Consultant/Engineer's inspection.

G. In addition to submittals required by the Conditions of the Contract, provide submittals required by governing authorities. Submit a final statement of accounting giving total adjusted Contract Sum, previous payments, and sum remaining due.

H. Consultant/Engineer will issue final change order reflecting approved adjustments to Contract Sum not previously made by change order.

1.04 UNIT PRICED QUANTITIES AND ALLOWANCES

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

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

C. Provide photograph or videotape documentation of repairs.

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

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

1.05 REINSPECTION FEES

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

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

A. Execute prior to final inspection.

B. Clean surfaces exposed to view, remove temporary labels, stains and foreign substances and polish transparent and glossy surfaces. Clean roofs, scuppers, roof drains, and drainage systems.

C. Clean site; sweep paved areas, rake clean other surfaces.

D. Remove waste and surplus materials, rubbish, and construction facilities from the project and from the site. Contractor will provide final cleaning after final acceptance.

E. Site shall be in original or new condition upon completion.

1.07 PROJECT RECORD DOCUMENTS

A. Record information on a set of drawings provided by Owner. Legibly mark each item to record actual construction, including:

1. Field changes of dimension and detail.

2. Changes made by modifications.

3. Details not on original Contract Drawings.

4. References to related shop drawings and modifications.

B. Store documents separate from those used for construction.

C. Keep documents current; do not permanently conceal any work until required information has been recorded.

D. At Contract Close-Out, submit documents with transmittal letter containing date, Project title, Contractor's name and address, list documents, and signature of Contractor.

1.08 OPERATION AND MAINTENANCE DATA

A. Prepare instructions and data in the form of an instruction manual by personnel experienced in maintenance and operation of described products.

B. Submit the following:

1. Part 1: Directory, listing names, addresses, email addresses and telephone numbers of Consultant/Engineer and Contractor.
2. Part 2: Operation and maintenance instructions, arranged by specification division. For each specification division, give names, addresses, and telephone numbers of subcontractors and supplies. List:
   a. Appropriate design criteria.
   b. List of Materials.
   c. Maintenance instructions.
   d. Shop drawings and product data.

C. If applicable, provide roof information card as required within roof system sections.

1.09 WARRANTIES

A. Provide triplicate, notarized copies. Execute Contractor's submittals and assemble documents executed by subcontractors, suppliers, and manufacturers. Provide table of contents and assemble in binder with durable plastic cover.

B. All warranties will be dated based on the established Substantial Completion date.

C. Manufacturer’s Warranties

1. Provide manufacturer’s warranties for each individual specification section meeting specification requirements.
   a. Attach copy of manufacturer’s inspection punch list, any required letters of clarification, and flashing endorsement.

D. Contractor Warranties

1. Provide the Three-Year Contractor Warranty as required in the Contract Documents.

1.10 CONTRACT CLOSE-OUT BINDER

A. The Contract Close-Out Checklist included in the Contract Documents shall be provided as the “Table of Contents” for the required Contract Close-Out Binder.

B. Provide, a minimum, three (3) sets of all listed documents bound in sturdy, three ring binders.

C. Each binder shall include a copy of the Final Change Order and the Final Application for Payment.

1. The original Request for Substantial Completion, Request for Final Completion, Final Change Order and Final Application for Payment should not be included in the Close-Out Binder.
PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01 77 00
THREE-YEAR CONTRACTOR WARRANTY
FOR PG 1 STRUCTURAL, WATERPROOFING & MASONRY REPAIRS

WHEREAS, ____________________________________________ of
(Address) ____________________________________________ herein called the "Prime Contractor", has performed the work for the

PG 1 Structural, Waterproofing & Masonry Repairs project.

Owner: The Medical University of South Carolina
97 Jonathan Lucas Street
Charleston, SC 29425-1900

Type of Building: ____________________________________________
Address: ______________________________________________________
Area of Work: __________________________________________________
Date of Acceptance: _____________________________________________

Warranty Period: Three Years Date of Expiration: __________________________

AND WHEREAS, the Prime Contractor has contracted to warrant said work against leaks and faulty or defective materials and workmanship for the designated Warranty Period; NOW, THEREFORE, the Prime Contractor hereby warrants, subject to the terms and conditions herein set forth, that during the Warranty Period Prime Contractor will at its own cost and expense, make or cause to be made such repairs to or replacements of said work thereof as are necessary to correct faulty and defective work to the satisfaction of the Owner, and as are necessary to maintain said work in a watertight condition. Prime Contractor warrants the said work as required, related and applicable to all Specification Sections and the drawings of the Contract Documents for the PG 1 Structural, Waterproofing & Masonry Repairs project (ADC Project Number: 16202).

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

1. Warranty covers the work by the Contractor to said building envelope (roofing, waterproofing and exterior walls) components of the systems within the scope of work under this contract and does not cover work by others under other contracts or future defects not directly attributable to work performed.

2. Specifically excluded from this Warranty are damages to the work caused by: a) lightning, hurricane force winds, hailstorm, and other unusual phenomena of the elements; b) fire c) failure of the building envelope (roofing, waterproofing and exterior walls) system resulting from structural settlement, excessive deflection, deterioration, and decomposition not caused by this project; d) faulty construction of walls not included in Contract Work, other conditions such as terminations and penetrations not included in the project; and e) activity related damages of the building envelope (roofing, waterproofing and exterior walls) by others including construction contractors, maintenance personnel, other persons (including vandalism by non-building envelope (roofing, waterproofing and exterior walls), animals and change in building function which subjects said building envelope (roofing, waterproofing and exterior walls) elements to hazardous chemicals not present during or before Contractor's work whether authorized or unauthorized by Owner. When the work has been damaged by any of the foregoing causes, the Warranty may be null and void for the specific locations affected until such damage has been repaired by the Owner or by another responsible party as so authorized and designated.

3. Other portions or parts of this building not within the scope of this work are not covered under this Warranty.
4. The Prime Contractor is responsible for damages to the facility caused by the scope of work for this project covered by this Warranty.

5. During the Warranty Period, if the Owner allows alteration of the work by anyone other than the Prime Contractor without written consent of the Prime Contractor, including cutting, patching and maintenance in connection with penetrations, alteration of said flashings, attachment of other work, and positioning of anything on the building envelope (roofing, waterproofing and exterior walls) system, this Warranty may become null and void at the specific locations upon the date of said alterations, but only to extent said alterations affect work covered by this Warranty. If the Owner engages the Prime Contractor to perform said alterations, the Warranty shall not become null and void, unless the Prime Contractor, prior to proceeding with alteration work, shall have notified the Owner in writing, showing reasonable cause for claim that said alterations would likely damage or deteriorate the work as warranted, thereby reasonably justifying a termination of this Warranty in the area of the altered work.

6. During the Warranty Period, if the original use of the building envelope (roofing, waterproofing and exterior walls) is changed and it becomes used for use other or service more severe than originally specified, this Warranty may become null and void at the specific locations upon the date of the said change, but only to the extent said change affects work covered by this Warranty.

7. The Owner shall promptly notify the Prime Contractor of observed, known or suspected leaks, defects, failures or deterioration, and shall afford reasonable opportunity for Prime Contractor to inspect the work, and to examine the evidence of such leaks, defects or deterioration regardless of the direct cause or causes.

8. Contractor will promptly inspect reported issues/leaks and if found to be attributed to work performed as part of the scope of this project, make the required repairs within 72 hours of written notification.
   a. If leaks are found to be from other sources beyond the scope of this warranty, Contractor shall so inform the Owner in writing. There will be no charge for this first service call.
   b. Future service calls and leak repairs not attributed to contractors work will be for Owner's account. Cost of repairs will be at a fair and reasonable rate. Materials required will be at a maximum of cost plus 15%.
   c. If the Prime Contractor fails to perform repairs in allotted time frame assigned herein this warranty, this warranty will not be voided by the Prime Contractor because of work performed by Others to repair deficient conditions regardless of whether repairs by Others are temporary or permanent in nature.

9. This Warranty is recognized to be the only warranty of the Prime Contractor on said work, and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to him in cases of building envelope (roofing, waterproofing and exterior walls) failure. This warranty shall not void, reduce, restrict or otherwise affect manufacturer warranties or performance bonds. Specifically, this Warranty shall not operate to relieve the Prime Contractor of his responsibility for performance of the original work, regardless of whether the Contract was a contract directly with Owner, or a subcontract with Owner's General Contractor.

10. If an extended warranty is required during the course of construction, the more stringent requirements shall take precedence.

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

Prime Contractor's Signature: ________________________________

Typed Name: ________________________________

As Its (position): ________________________________

Date: ________________________________

Three Year Contractor Warranty

01 77 05 - 2

16202
Certificate of Substantial Completion

PROJECT:
(Please provide the name and address of the project)

PROJECT NUMBER: / OWNER: ☐

CONTRACT FOR: ARCHITECT: ☐

CONTRACT DATE: CONTRACTOR: ☐

Owner Project Number: H51-9831-PG

TO OWNER: TO CONTRACTOR:
(Name and address) (Name and address)
The Medical University of South Carolina Engineering and Facilities
97 Jonathan Lucas Street MSC 190 Charleston, SC 29425-1900

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

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

Warranty Date of Commencement

ARCHITECT

BY

DATE OF ISSUANCE

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

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

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

CONTRACTOR

BY

DATE

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

OWNER

BY

DATE

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

(Note: Owner’s and Contractor’s legal and insurance counsel should determine and review insurance requirements and coverage.)
# Section 01 77 25
## Contract Close-Out Checklist

**Project:**  PG 1 Structural, Waterproofing & Masonry Repairs  
**ADC Project Number:** 16202

<table>
<thead>
<tr>
<th>Substantial Completion Date Awarded:</th>
<th>Date Received by ADC Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Certificate of Substantial Completion – AIA G704 (copy) with Contractor Punchlist</td>
<td></td>
</tr>
</tbody>
</table>
| • Correct Project Information  
• Correct Date  
• Signed and Dated |  |
| 2. Contractor’s Affidavit of Payment of Debts and Claims - AIA G706 (copy) |  |
| • Correct Project Information  
• Signed and Dated  
• Notarized and Sealed |  |
| 3. Contractor’s Affidavit of Release of Liens Form – AIA G706A (copy) |  |
| • Correct Project Information  
• Signed and Dated  
• Notarized and Sealed |  |
| 4. Consent of Surety to Final Payment - AIA G707 |  |
| • Correct Project Information  
• Signed and Dated  
• Notarized and Sealed |  |
| 5. Information Card |  |
| • Provide hard copy of form for each system  
• Install exterior copy in designated location at facility |  |
| 6. Manufacturer’s Warranties |  |
| • Provide Manufacturer’s Warranties as required by the Contract Documents  
• Dated on or after Substantial Completion date and signed |  |
| 7. Operation and Maintenance Data |  |
| • Provide any required / necessary operation / maintenance data for systems |  |
| 8. Three-Year Contractor Warranty |  |
| • Provide Three-Year Contractor Warranty as required by the Contract Documents  
• Dated on or after Substantial Completion date and signed |  |
| 9. ADC Substantial Completion Inspection Punch List |  |
| • All items signed off by the Contractor as completed |  |
| 10. ADC Final Completion Inspection Punch List |  |
| • All items signed off by the Contractor as completed |  |
| 11. List of Materials Used by Specifications Section |  |
| • Provide list of materials / manufacturers |  |
| 12. Supplier – Address and Phone Numbers |  |
| • Provide list of suppliers for systems |  |
| 13. Record Drawings |  |
| • Provide set of contract drawings with all field changes / modifications shown in red |  |
| 14. Summary of Unit Prices |  |
| • Provide required documentation of required unit prices  
• Provide summary balance of all unit prices and remaining balance |  |
| 15. Final Change Order (copy) |  |
| • Provide Final Change Order with Unit Prices / Balances included |  |
| 16. Final Application for Payment (copy) |  |
| • Provide Final Invoice, including Final Change Order |  |

*Note: Provide required original documents under separate correspondence to ADC with copy included within the Close-Out Documents.*
SECTION 02 04 03
CUTTING AND PATCHING FOR BUILDING ENVELOPE

PART 1 - GENERAL

1.01 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 demolition, modifications and new wall assemblies to the extent shown on the structural drawings.

3. Provide complete removal and replacement of exterior sealant joints to the exterior façade.

4. Pressure wash, prepare decking surfaces for new parking striping/markings of all indicated floors (decks/levels).

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

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

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

8. Remove and replace defective or substandard work.

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

B. Sequencing

1. See Sections 01 31 13, Coordination, 01 31 19, Progress Schedule Meetings and 01 32 03, Project Schedule.

2. Submit a weekly plan by parking level, indicating work areas.

   a. Only one level/deck can be closed off at a time and ingress/egress must be maintained. See drawings for individual deck/level phasing requirements.
b. Critical areas shall be completed from Friday at 5PM until Monday at 5 AM, weekdays from 6 PM to 6 AM.

c. Provide all signage, markings and barricade for redirecting parking/traffic.

1.02 RELATED REQUIREMENTS

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

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

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

D. Section 03 90 03: Concrete Restoration for Deck

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

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

G. Section 07 60 03: Sheet Metal for Building Envelope

H. Section 07 91 03: Prefabricated Parking Garage Joints

I. Section 07 92 03: Sealants for Building Envelope

1.03 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

1.04 QUALITY ASSURANCE

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

   2. Prior to cutting-and-patching the following categories of work, obtain the Owner’s approval to proceed with cutting- and-patching as proposed in the submittal by the Contractor:
      a. Concrete at each deck level indicated in structural drawings and at sixth floor expansion joint.
      b. Masonry, brick and cmu (select areas) as indicated on structural drawings.
      c. Preparation/priming structural steel.
      d. Preparation and restriping/markings of parking deck surfaces as Alternate Numbers 2 and 3.
      e. 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.

1.05 SUBMITTALS

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

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

C. Proposals for Cutting and Patching

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

   a. Include description of why cutting-and-patching cannot (reasonably) be avoided, how it will be performed, how structural elements (if any) will be reinforced, products to be used, firms and tradesmen to perform the work, approximate dates of the work, and anticipated results in terms of variations from the work as originally completed (structural, operational, visual and other qualities of significance).
b. Where applicable, include cost proposal, suggested alternatives to the cutting and patching procedure proposed, and a description of the circumstances that lead to the need for cutting-and-patching.

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

PART 2 - PRODUCTS

2.01 MATERIALS

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

2.02 PAYMENT FOR COSTS

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

PART 3 - EXECUTION

3.01 CONDITIONS

A. Inspection

1. Inspect existing conditions, including elements subject to movement or damage during 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.

3.02 PREPARATION

A. Temporary Support: Provide adequate temporary support for work to be cut, to prevent failure. Do not endanger other work.

B. Protection: Provide adequate protection of other work during cutting-and-patching, to prevent damage; and provide protection of the work from adverse weather exposure.
3.03 CUTTING AND PATCHING

A. General: Employ skilled tradesmen to perform cutting- and-patching. Except as otherwise indicated or approved by the Owner, proceed with cutting-and-patching at the earliest feasible time, in each instance, and perform the work promptly.

B. Cut work by methods least likely to damage work to be retained and work adjoining. Review proposed procedure with original Installer where possible, and comply with his recommendations.

1. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete work.

2. Comply with the requirements of 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.

3.04 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

1.01 SUMMARY

A. This section includes the demolition of the following products/accessories/systems to complete the work.

1. Function, access and usage of the facility shall be maintained during the demolition and construction process.

2. Disconnect, relocate, remove and re-install any interior/exterior items required to complete the work.
   a. Electrical conduits/cables.
   b. Mechanical/plumbing.
   c. Signage.
   d. Cameras/security equipment.

3. Extent of demolition to structural elements including masonry walls is indicated on structural drawings.

4. Preparation of substrates to receive repairs in accordance with the technical specifications. Removal of all loose, peeling or otherwise deteriorated materials to provide smooth, uniform, compatible and sound substrate.

5. 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.

6. Complete removal of existing paint/striping to provide new for Alternate Numbers 2 and 3.

B. Sequencing

1. See Sections 01 31 13, Coordination, 01 31 19, Progress Schedule Meetings and 01 32 03, Project Schedule.

2. Submit a weekly plan by parking level, indicating work areas.
   a. Only one level/deck can be closed off at a time and ingress/egress must be maintained. See drawings for individual deck/level phasing requirements.

Demolition and Removal for Building Envelope

02 05 03 - 1

16202
b. Critical areas shall be completed from Friday at 5PM until Monday at 5 AM, weekdays from 6 PM to 6 AM.

c. Provide all signage, markings and barricade for redirecting parking/traffic.

C. 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.

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

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

1.02 RELATED REQUIREMENTS

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

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

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

D. Section 03 90 03: Concrete Restoration for Deck

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

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

G. Section 07 60 03: Sheet Metal for Building Envelope

H. Section 07 91 03: Prefabricated Parking Garage Joints

I. Section 07 92 03: Sealants for Building Envelope

1.03 REFERENCES

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

B. AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI):

1. ANSI/ASSE A10.6 (2006) Safety Requirements for Demolition Operations

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

1.04 GENERAL REQUIREMENTS

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

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

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

1.05 SUBMITTALS

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

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

C. Demolition Plan:
   1. Submit proposed demolition and removal procedures to the Consultant/Engineer for approval before work is started.
2. Include procedures for careful removal and disposition of materials while function of building is maintained, a disconnection schedule of effected utility services, and a detailed description of methods and equipment to be used for each operation and of the sequence of operations.

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

1.06 REGULATORY AND SAFETY REQUIREMENTS

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

1. In addition to the requirements of the contract clauses, safety requirements shall conform to ANSI A10.6, "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.

1.07 DUST AND DEBRIS CONTROL

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

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

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

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

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

1.08 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.

3. Vehicular traffic flow and ingress/egress must be maintained.

C. Existing Work:

1. Protect existing work, which is to remain in place or be reused.

2. The Contractor shall particularly ensure protection for pedestrians and vehicles from construction and specifically dust, dirt and debris.

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/Parking Areas:

   a. The interior/parking areas of the building shall be protected at all times from dust, debris, materials and equipment associated with the 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, plumbing and electrical services and accessories during the demolition process. This includes safety, eye wash, security, etc.

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.

1.09 RELOCATIONS

A. Perform the removal and reinstallation of the relocated items as indicated with workmen skilled in the trades involved.

B. Repair items to be relocated, which are damaged or replace damaged items with new undamaged items as approved by the Consultant/Engineer.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 EXISTING FACILITIES

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

B. Painting/Restriping (Removal for Alternate Numbers 2 and 3):
   1. Remove the selective components as specified to complete the work.
   2. Completely remove existing painting/striping, prepare and prime without damage to the existing substrates to remain in place.

C. Wall and Garage Expansion Joints
   1. Remove the selective components as specified to complete the work for all locations shown on structural drawings.
   2. Remove selective components (brick, CMU, concrete, precast, etc.) and associated accessories without damage to the existing concrete surfaces or structural framing, fenestrations in accordance with the technical specifications.
   3. Remove and replace the sixth floor horizontal expansion joint.

3.02 DISPOSITION OF MATERIALS

A. Title of Materials:
   1. Except where specified in other sections, all materials and equipment removed, and not reused, shall become the property of the Contractor and shall be removed from the job site.
2. Title to the materials resulting from demolition, and materials and equipment removed, is vested in the Contractor upon approval by the Consultant/Engineer of the Contractor's demolition and removal procedures, and authorization by the Consultant/Engineer to begin demolition.

3. The Owner will not be responsible for the condition or loss of, or damage to, such property after notice to proceed.

B. Reuse of Materials and Equipment:

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

3.03 CLEANUP

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

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

3.04 UNIT PRICED QUANTITIES

A. In accordance with Section 01 21 10, Unit Prices and Allowances, 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 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 Engineer of Record.

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 ADMIXTURES

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-saturate d 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 data bases, 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
A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R limits for class of surface specified.

1. Apply to surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch (3 mm) in height.

1. Apply to concrete surfaces exposed to public view.

C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

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 and openings 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. Recoat 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 DECK

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes minor non-structural repairs to in place concrete surfaces of the various deck levels and ramps to/from the top deck. Surfaces include:

1. Random vertical locations.
2. Horizontal locations including the following.
   a. Parking deck surfaces at penetrations.
   b. Nosings at new prefabricated expansion joint at sixth floor.
   c. Areas shown on structural drawings.
3. Mechanically abraid and remove all delaminated, scaled or unsound concrete from each deck level then blast clean the surfaces. All deteriorated concrete is to be removed and exposed rebar to be cleaned and concrete restoration.

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 as listed in Section 01 21 10, Unit Prices and Allowances. This quantity is to be included in the Base Bid as listed in Section 01 21 10, Unit Prices and Allowances. Any quantity above or below the set quantity amount shall result in an add or deduct to the Contract Sum based on the unit price provided.

1.02 RELATED REQUIREMENTS

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

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

C. Section 02 05 03: Demolition and Removal for Building Envelope
D. Section 04 50 03: Select Masonry Replacement Restoration and Cleaning

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

F. Section 07 60 03: Sheet Metal for Building Envelope

G. Section 07 91 03: Prefabricated Parking Garage Joints

H. Section 07 92 03: Sealants for Building Envelope

1.03 REFERENCES

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

B. AMERICAN 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):


10. ASTM C 231 (2014) Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
15. ASTM C 642 (2013) Density, Absorption, and Voids in Hardened Concrete
17. ASTM C 672/C 672M (2012) 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

1.04 SUBMITTALS

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

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

1.05 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.
1.06 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.

1.07 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

2.01 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.
2.02 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

3.01 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.
3.02 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.

3.03 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.

3.04 UNIT PRICED QUANTITIES

A. In accordance with Section 01 21 10, Unit Prices and Allowances, 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 pre-blended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store pre-blended, 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:

   1. Provide special shapes at special conditions.
   2. Provide square-edged units for outside corners.

E. 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.
1.7 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

I. 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 multi-wythe (including brick veneer) masonry, provide types as follows:
1. 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.


2. 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.

J. Hot-Dip Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.

K. 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.

L. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

1.8 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.
1. Do not use calcium chloride in mortar or grout.

C. 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.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
2. Verify that reinforcing dowels are properly placed.
3. 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.

1. Mix units from several pallets or cubes as they are placed.

1.9 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.

I. 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

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:

1. Install preformed control-joint gaskets designed to fit standard sash block.

J. 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

K. Install steel lintels and shelf angles where indicated. All lintels and shelf angles (and shelf anchor rods) shall be hot-dipped galvanized.

L. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

3.10  REINFORCED UNIT MASONRY INSTALLATION

M. 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.

1. 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.

2. Limit height of vertical grout pours to not more than 60 inches

3.11  FIELD QUALITY CONTROL

N. 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.

1.10 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
PART 1 - GENERAL

1.01 SUMMARY

A. Extent of masonry removal identified structural drawings.

B. Work in this section includes inspection and repair of existing masonry (brick and CMU block) and other wall surfaces/wall areas and substrates where new exterior wall systems are not provided. Work also includes masonry repairs and repointing of the 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.

C. 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.

D. Clean entire exterior wall surfaces prior to commencing and upon completion.

1. Clean entire exterior building envelope including ramps, walkways, stairs, louvers, roofs, screen walls, etc. upon completion of construction work.

E. A set quantity is required as listed in Section 01 21 10, Unit Prices and Allowances. This quantity is to be included in the Base Bid as listed in Section 01 21 10, Unit Prices and Allowances. Any quantity above or below the set quantity amount shall result in an add or deduct to the Contract Sum based on the unit price provided.

1.02 RELATED REQUIREMENTS

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

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

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

D. Section 03 90 03: Concrete Restoration for Deck

E. Section 07 14 03: Concrete Deck Coating for Vehicular Traffic
F. Section 07 60 03: Sheet Metal for Building Envelope

G. Section 07 91 03: Prefabricated Parking Garage Joints

H. Section 07 92 03: Sealants for Building Envelope

1.03 REFERENCES

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

B. AMERICAN CONCRETE INSTITUTE (ACI):

1. ACI 530 (2005) Building Code Requirements for Masonry Structures Commentaries

C. ASTM INTERNATIONAL (ASTM):


7. ASTM C 91 (2012) Masonry Cement


D. BRICK INDUSTRY ASSOCIATION (BIA):

E. INTERNATIONAL CODE COUNCIL (ICC):


G. SHEET METAL & AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA):

1.04 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.

1.05 SUBMITTALS

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

1.06 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.

1.07 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.
1.08 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.

1.09 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.

1.011 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.

1.012 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.

1.013 SCHEDULING
A. Schedule work under the provisions of Section 01 33 00, Submittals.
B. Perform cleaning and washing to exterior masonry on weekends or after 5 PM and before 7 AM.

PART 2 - PRODUCTS

2.01 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.

2.02 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.

2.03 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.

2.04 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.

Select Masonry Replacement Restoration and Cleaning
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2.05 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. 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.

F. 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.

2.06 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 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.

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.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that surfaces to be cleaned, and/or restored are ready for work of this section.

3.02 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.

3.03 GENERAL INSTALLATION

A. Except as otherwise indicated, comply with installation instructions and recommendations of the BIA and industry standards.

B. Install reglets to receive counterflashing in manner and by methods indicated in concrete and masonry.

C. Counterflashing and Reglets:

1. Fabricate counterflashings and reglets as 2 piece assemblies to permit installation of counterflashing after base flashings are in place.

2. Fabricate reglets of same metal and thickness as counterflashings.

3. Overlap all flashing 4” minimum and sealant/mastic within lap.

D. Seal around all fasteners, existing or new, that extend thru the flashing materials.
3.04 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 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.

3.05 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.

3.06 LINTEL/SHELF ANGLE MAINTENANCE (ANY REMAINING)

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.

3.07 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.

3.08 CLEANING EXISTING 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.

3.09 CLEANING NEW EXTERIOR WALL SURFACES/ALL AREAS

A. Protect area below cleaning operation rinse continuously for duration of cleaning.

3.10 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.

3.11 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.
3.12 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.

3.13 UNIT PRICED QUANTITIES

A. In accordance with Section 01 21 10, Unit Prices and Allowances, 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 Engineer of Record 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."


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 07 14 03
CONCRETE DECK COATING FOR VEHICULAR TRAFFIC

PART 1 - GENERAL

1.01 SUMMARY

A. Work includes limited fluid applied coating system over the select localized areas of
the floors (decks/levels) to include horizontal surfaces at penetration
repairs/modifications to top deck concrete surfaces in the locations specifically
identified on the drawings.

1. Cleaning select deck surface, repairs to the existing cracks and replacement of
all exterior sealant joints are also required prior to coating work.

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. A primer and minimum 2 coat polyurethane-based coating system is required.

2. A minimum total dry film thickness (DFT) of 45 mils is required in the field
and a minimum total dry film thickness of 60 mils in the turning lanes and
ramps. Also see warranty requirements.

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 Deck, shall
be included to provide suitable substrate.

F. Alternate Numbers 2 and 3 includes restriping and repainting surfaces. See
Section 32 17 23, for requirements for striping and painting the all deck levels and
ramps after the completion of work (repairs/modifications). Confirm products are
compatible with concrete deck coating system or use deck coating material for
stripping/painting.

G. A set quantity is required as listed in Section 01 21 10, Unit Prices and Allowances.
This quantity is to be included in the Base Bid as listed in Section 01 21 10, Unit
Prices and Allowances. Any quantity above or below the set quantity amount shall
result in an add or deduct to the Contract Sum based on the unit price provided.
1.02 RELATED REQUIREMENTS

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

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

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

D. Section 03 90 03: Concrete Restoration for Deck

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

F. Section 06 10 03: Rough Carpentry for Roofing

G. Section 07 60 03: Sheet Metal for Building Envelope

H. Section 07 91 03: Prefabricated Parking Garage Joints

I. Section 07 92 03: Sealants for Building Envelope

J. Section 08 81 03: Fenestration Replacement

1.03 REFERENCES

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

B. ASTM INTERNATIONAL (ASTM):


C. INTERNATIONAL CODE COUNCIL (ICC):


1.04 SUBMITTALS

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

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

C. 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.
1.05 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.

1.06 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.

1.07 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.
1.08 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.

1.09 WARRANTY

A. Contractor and manufacturer warranties shall be exclusive and independent of each other. Each warranty shall be issued directly to the Owner and dated as noted below.

B. Furnish the Three-Year Contractor Warranty as provided in Section 01 77 05, Three-Year Contractor Warranty. The warranty period shall be not less than 3 years from the date of substantial completion.

1. If the Contractor fails to perform repairs within 72 hours of written notification, the warranty will not be voided because of work being performed by others to repair deficiencies/failures regardless of manufacturer’s warranty to the contrary.

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

2.01 APPROVED MANUFACTURERS

A. STO

B. Sonneborne

C. Pecora

D. Neogard

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.
2.02 MEMBRANE COMPOUND MATERIAL

A. A primer/sealer and two-coat elastomeric system, specifically designed for application onto concrete surfaces for vehicular traffic is required.

1. Concrete Primer: As required by the waterproofing manufacturer.

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.

2.03 ACCESSORIES

A. Patching Mortar: Patching mortar for masonry repairs. See Section 03 90 03, Concrete Restoration for Deck for additional requirements.

B. Surface Primer: Manufacturers, recommended concrete primer.

C. Polyurethane sealant as indicated by the waterproofing manufacturer.

D. Flashing or Joint Fabric: Min. 24 mil thick polyester, fabric to be used at all locations where extra reinforcement is required at expansion/contraction areas and as indicated by the waterproofing manufacturer.

PART 3 - EXECUTION

3.01 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.

3.02 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.

*Concrete Deck Coating for Vehicular Traffic*

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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 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.

**Crack Size and Product Description**

**And Method of Treatment**

- **.004-.010 (4-10 mils)**
  - Hairline shrinkage cracks of this size will usually be filled by normal procedures.

- **.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.

- **.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.

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3.03 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.

3.04 APPLICATION

A. Roller, squeegee or 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 the total minimum thickness required.

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.

3.05 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.

3.06 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.

3.07 UNIT PRICED QUANTITIES

A. In accordance with Section 01 21 10, Unit Prices and Allowances, 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 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: ________________________________
    ____________________________________________________________________________
14. Coating Contractor (Name / Address / Phone No.): ________________________________
    ____________________________________________________________________________
15. Prime Contractor (Name / Address / Phone No.): ________________________________
    ____________________________________________________________________________

Contractor's Signature: ________________________________ Date: ________________________________
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 (ultimate)
   b. Zone 4: 54 psf (ultimate)
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
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes all sheet metal items and accessories specified or as required to complete the work. Applicable edge metal systems shall adhere to the general requirements of ANSI/SPRI ES-1 in accordance with the IBC 2015.

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.

1.02 RELATED REQUIREMENTS

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

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

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

D. Section 03 90 03: Concrete Restoration for Deck

E. Section 04 50 03: Select Masonry Replacement Restoration and Cleaning
F. Section 07 14 03: Concrete Deck Coating for Vehicular Traffic

G. Section 07 91 03: Prefabricated Parking Garage Joints

H. Section 07 92 03: Sealants for Building Envelope

1.03 REFERENCES

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

B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):


2. ANSI/ASME A112.6.4 (2008) Roof, Deck and Balcony Drains

C. ASTM INTERNATIONAL (ASTM):


5. ASTM A 924 / A 924M (2006) Steel Sheet, Metallic-Coated by the Hot-Dip Process


7. ASTM B 32 (2014) Solder Metal


D. FACTORY MUTUAL (FM):

1. FM DS 1-49 (Latest Edition) Perimeter Flashing

E. INTERNATIONAL CODE COUNCIL (ICC):


F. SHEET METAL & AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA):


1.04 SUBMITTALS

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

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

C. Drawings:

1. Details shall be in strict accordance with the drawings provided.


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.

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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. Safety Data Sheets (SDS): Submit Safety Data Sheets with each specification section and include with Safety Plan.

1.05 CONFORMANCE AND COMPATIBILITY

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

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery:
   1. Package and protect materials during shipment.
   2. Materials shall be delivered to the site in an undamaged condition, and in a timely order for incorporation in the work.

B. Storage:
   1. Do not store more materials on the roof than can be installed the same day and remove unused materials at the end of each day.
   2. Materials shall be stored, handled, and installed in a manner to protect them from all damage during the entire construction period.
   3. Immediately remove damaged materials from the job site and replace with new material.

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

1.07 DIFFERING SITE CONDITIONS

A. The contractor will notify the Consultant/Engineer immediately of any unforeseen site condition.

B. The contractor will be required to secure the areas and dry-in the roofing system at no cost to the Owner until the problem is resolved.

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PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Shall conform to the respective reference specifications and other requirements specified herein.

B. Edge metal systems shall adhere to the general requirements of ANSI/SPRI ES-1.

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.

2.02 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. Stainless Steel (for pitchpans / penetrations):
   1. ASTM A 167, Series 302 or 304, 22 gage and soldered.

D. Cleats:
   1. 1 gage/thickness heavier than metal attached; 22 gage maximum for galvalume cleats, 0.050 inches maximum for aluminum cleats.

E. Use the same metal or a metal compatible with the item fastened when connecting to existing metal.

2.03 OTHER MATERIALS

A. 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.

B. Membrane Liner and Waterproof Underlayment:
   2. Ensure product is compatible with roof membrane and membrane adhesives.

C. Breathable Underlayment:
   1. A # 30 felt or approved equal.
D. Butyl Tape:

1. Double-sided butyl tape of width as required.

E. Aluminum Termination Bar:

1. One (1) inch x 1/8 inch thick with slotted holes a minimum of 6 inches on center.

F. Existing Drains:

1. Provide stainless steel bolts, cast iron clamping ring and metal strainer at all drains.

2. Strainer configuration shall be compatible with and lock to existing drain.

3. ASTM A48, Class 25 and ANSI/ASME A112.6.4, Roof, Deck and Balcony Drains, and paint coated.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Requirements:

1. Provide new metal for all work unless otherwise indicated.

2. Make surfaces to receive sheet metal plumb and true, clean, even, smooth, dry and free of defects and projections, which might affect application.


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.

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 counterflashings 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 counterflashings 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.

3.02 SPECIFIC COMPONENTS
A. Counterflashing and Skirts:
   1. All existing counterflashing noted to be reused shall be carefully removed and stored until reinstallation.
2. All damaged sheet metal or missing metal, or material damaged during removal, which would restrict watertight application or provide unsightly appearance as determined by the Consultant/Engineer shall be replaced, at no cost, with new, matching materials.

3. Form the flashing to the required shapes before installation. Provide 4 inch vertical face, minimum, unless otherwise indicated.

4. Metal work shall adhere to details shown.

5. All inside and outside corners and termination pieces shall be shop fabricated.

6. Cleats and locking clips to be one gage/increment thicker than metal being attached.

B. Reglets:

1. Care should be taken not to damage existing reglet /counterflashing when cutting counterflashing and installing new materials.

2. All damaged sheet metal or missing metal, or material damaged during removal, which would restrict watertight application or provide unsightly appearance as determined by the Consultant/Engineer shall be replaced, at no cost, with new, matching materials.

3. After completion of all base and counterflashing work, the sealant of all reglets shall be completely removed, the area cleaned, and new sealant installed as specified in Section 07 92 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. 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.

END OF SECTION 07 60 03
SECTION 07 91 03
PREFABRICATED PARKING GARAGE JOINTS

PART 1 - GENERAL

1.01 SUMMARY

A. Base Bid includes replacement of the sixth floor deck/level existing steel expansion joints at the parking garage with a new prefabricated expansion joint and flexible cover. 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 indicated 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 joint 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.

1.02 RELATED REQUIREMENTS

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

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

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

D. Section 03 90 03: Concrete Restoration for Deck

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

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

G. Section 07 60 03: Sheet Metal for Building Envelope

H. Section 07 92 03: Sealants for Building Envelope

1.03 REFERENCES

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


C. INTERNATIONAL CODE COUNCIL (IBC):


1.04 SUBMITTALS

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

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

C. 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.

1.05 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.

1.06 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.

1.07 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.
1.08 WARRANTY

A. Furnish the Three-Year Contractor Warranty as provided in Section 01 77 05, Three-Year Contractor Warranty. The warranty period shall be not less than 3 years from the date of substantial completion.

1. If the Contractor fails to perform repairs within 72 hours of written notification, the warranty will not be voided because of work being performed by others to repair deficiencies/failures regardless of manufacturer’s warranty to the contrary.

PART 2 - PRODUCTS

2.01 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.

2.02 ACCESSORIES

A. Provide a complete WABO Safetyflex or approved equal.

B. Surface Primer: Manufacturers, recommended primer.

PART 3 - EXECUTION

3.01 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.

3.02 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.

3.03 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.

3.04 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.

3.05 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
SECTION 07 92 03

SEALANTS FOR BUILDING ENVELOPE

PART 1 - GENERAL

1.01 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. Wet Seal of Storefront/Entrances.

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.

1.02 RELATED REQUIREMENTS

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

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

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

D. Section 03 90 03: Concrete Restoration for Deck

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

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

G. Section 07 60 03: Sheet Metal for Building Envelope

H. Section 07 91 03: Prefabricated Parking Garage Joints
1.03 REFERENCES

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

B. ASTM INTERNATIONAL (ASTM):


C. SEALANT WATERPROOFING RESTORATION INSTITUTE (SWRI):

2. Validation Program

1.04 SUBMITTALS

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

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

C. Manufacturer's Catalog Data

1. Sealants
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.

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1.05 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.

1.06 DELIVERY AND STORAGE

A. Delivery:

1. Deliver materials to the job site in unopened in manufacturers' external shipping containers, with brand names, date of manufacture, color, and material designation clearly marked thereon.

2. Elastomeric sealant containers shall be labeled to identify type, class, grade and use.

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

2.01 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.

2.02 PRIMER FOR SEALANT

A. Provide a non-staining, quick drying type and consistency recommended by the sealant manufacturer for the particular application.
2.03 BOND BREAKERS
A. Provide the type and consistency recommended by the sealant manufacturer for the particular application.
B. Liquid applied bond breakers are not permitted.

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

2.05 CLEANING SOLVENTS
A. Provide type recommended by the sealant manufacturer.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION
A. Surfaces shall be clean, dry to the touch, and free from dirt, frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would tend to destroy or impair adhesion.
B. When resealing an existing joint, 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.

3.02 SEALANT PREPARATION
A. Prepare surfaces in strict accordance with the Contract Documents and any Manufacturers printed instructions.

3.03 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.

3.04 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.
3.05 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.

3.06 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.

3.07 UNIT PRICED QUANTITIES
A. In accordance with Section 01 21 10, Unit Prices and Allowances, 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
Sealants For Building Envelope
07 92 03 - 8

16202
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 spattered 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.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY OF WORK

A. Complete removal of the existing paint/striping is required.

B. Alternate Numbers 2 and 3 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.

C. 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.

D. 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.

E. Reflective Media Dispenser

1. 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.

1.02 RELATED REQUIREMENTS

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

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

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

D. Section 03 90 03: Concrete Restoration for Deck
E. Section 04 50 03: Select Masonry Replacement Restoration and Cleaning

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

G. Section 07 60 03: Sheet Metal for Building Envelope

H. Section 07 91 03: Prefabricated Parking Garage Joints

I. Section 07 92 03: Sealants for Building Envelope

1.03 REFERENCES

A. AMERICAN ASSOCIATION OF STATE AND HIGHWAY TRANSPORTATION OFFICIALS (AASHO):


B. FEDERAL SPECIFICATIONS (FS):


1.04 SUBMITTALS

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

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

C. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

D. Composition Requirements: Manufacturer's current printed product description and Material Safety Data Sheets (MSDS) for each type paint/color proposed for use.

E. Qualifications: Documentation on personnel qualifications, as specified.

F. 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.

1.05 QUALITY ASSURANCE

A. Qualifications

1. Submit documentation certifying that pertinent personnel are qualified for equipment operation and handling of chemicals.
B. Traffic Controls

1. 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

1. When traffic in existing streets, roads or parking areas must be rerouted or controlled to accomplish the work, the necessary warning signs, flagpersons, and related equipment for the safe passage of vehicles shall be provided.

1.06 DELIVERY, STORAGE, AND HANDLING

A. 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.

1.07 ENVIRONMENTAL REQUIREMENTS

A. 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

2.01 PAINT

A. 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.

2.02 REFLECTIVE MEDIA

A. Reflective media for roads and streets shall conform to FS TT-B-1325, Type I, Gradation A or AASHTO M247, Type I.
PART 3 - EXECUTION

3.01 SURFACE PREPARATION

A. 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.

B. 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.

3.02 APPLICATION

A. All pavement markings and patterns shall be placed as shown on the plans.

1. Paint

   a. 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:

   a) 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

1. 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