

U N I V E R S I T Y     O F  
SOUTH CAROLINA



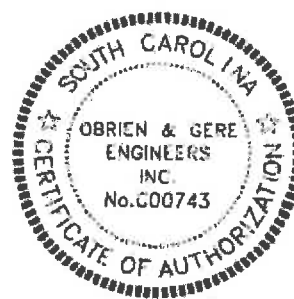
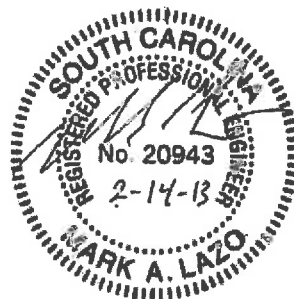
JOHN WELSH  
HUMANITIES CENTER BUILDING  
FIRE ALARM UPGRADES

Columbia, SC

State Project Number: H27-I851-C

Construction Documents

2-14-2013 – FINAL



## **TABLE OF CONTENTS**

**PROJECT NUMBER:** H27-1851-C

**PROJECT NAME:** John Welsh Humanities Center Building Fire Alarm Upgrades

### **SECTION**

<b>Table of Contents</b> ( <i>insert numbers of pages</i> ).....	<b>2</b>
<b>Invitation for Bids</b> (SE-310).....	<b>1</b>
<b>Instructions to Bidders</b> (AIA Document A701 – 1997 Edition *).....	<b>6</b>
<b>00201-OSE Standard Supplemental Instructions to Bidders</b> .....	<b>9</b>
<i>[Insert supplemental project specific instructions to bidders if needed.]</i>	
<b>Bid Bond</b> (AIA A310).....	<b>1</b>
<b>Standard Bid Form</b> (SE-330).....	<b>4</b>
<b>Standard Form of Agreement between Owner and Contractor</b> (AIA Document A101 – 2007 Edition*).....	<b>7</b>
<b>00501-OSE Standard Modifications to AIA A101-2007</b> .....	<b>3</b>
<i>[Insert supplemental project specific modifications to AIA A101 if needed.]</i>	
<b>General Conditions of the Contract for Construction</b> (AIA Document A201 – 2007 Edition*).....	<b>44</b>
<b>00811-Standard Supplementary Conditions</b> (Supplement to AIA Document A201-2007 Edition General Conditions of the Contract).....	<b>26</b>
<u><b>USC Supplemental Conditions</b></u>	
<i>[Insert additional, project specific, supplementary conditions if needed.] (For the above AIA Documents do not "edit" the document; use them as cover sheets and attach the OSE modification documents.) (*Insert either an original AIA document or a "replacement page." – See Chapter 5.)</i>	
<b>Performance Bond</b> (SE-355).....	<b>2</b>
<b>Labor and Material Payment Bond</b> (SE-357).....	<b>2</b>
<b>Contractors One Year Guarantee</b> .....	<b>1</b>

**TECHNICAL SPECIFICATIONS**

*(List the technical specifications using the same Divisions numbers and titles as shown on the individual technical specification sections. Provide the issue date and revision number for each section.)*

<u>SECTION</u>	<u>TITLE</u>	<u>PAGES</u>
<u>DIVISIONS 1 THRU 6 NOT USED</u>		
<u>DIVISION 7</u>	<u>THERMAL AND MOISTURE PROTECTION</u>	
<u>- 07841</u>	<u>Firestopping</u>	<u>5</u>
<u>DIVISIONS 8 THRU 15 NOT USED</u>		
<u>DIVISION 16</u>	<u>ELECTRICAL</u>	
<u>- 16010</u>	<u>Electrical General</u>	<u>18</u>
<u>- 16071</u>	<u>Seismic Protection for Electrical Work</u>	<u>7</u>
<u>- 16095</u>	<u>Electrical Systems Identification</u>	<u>3</u>
<u>- 16110</u>	<u>Raceways, Boxes, and Fittings</u>	<u>14</u>
<u>- 16120</u>	<u>Wire and Cable</u>	<u>7</u>
<u>- 16750</u>	<u>Fire Alarm System</u>	<u>16</u>
<u>APPENDIX</u>		
<u>- Appendix A - Asbestos Report</u>		<u>14</u>
<u>- Appendix B - Contractor's One Year Guarantee</u>		<u>1</u>

**REQUEST FOR ADVERTISEMENT****PROJECT NAME:** John Welsh Humanities Center Building Fire Alarm Upgrades**PROJECT NUMBER:** H27-I851-C**PROJECT LOCATION:** Buildings 54 and 55, Columbia, SC

Contractor may be subject to performance appraisal at close of project

**BID SECURITY REQUIRED?** Yes ☒ No ☐**PERFORMANCE & PAYMENT BONDS REQUIRED?** Yes ☒ No ☐**CONSTRUCTION COST RANGE:** \$200,000 - \$300,000**DESCRIPTION OF PROJECT:** Project scope includes the demolition of each building's existing fire alarm system devices, appliances and components, with the exception of building 54 ground floor alteration, and the installation of a new addressable fire alarm system with new fire alarm devices, appliances and components. The existing fire alarm system panel, 4100U, shall remain to be upgraded for the scope of work. Small and minority business participation is encouraged.**A/E NAME:** O'Brien & Gere**A/E CONTACT:** Chris Butts, PE, SET, CFPS**A/E ADDRESS:** Street/PO Box: 2170 Ashley Phosphate Rd., Suite 504City: CharlestonState: SC ZIP: 29406-**EMAIL:** chris.butts@obg.com**TELEPHONE:** 843-553-6670**FAX:** 843-553-0755All questions & correspondence concerning this Invitation shall be addressed to the A/E.**BIDDING DOCUMENTS/PLANS MAY BE OBTAINED FROM:** http://purchasing.sc.edu Bidders are responsible for obtaining all updates to bidding documents from USC purchasing website.**PLAN DEPOSIT AMOUNT:** \$0.00 **IS DEPOSIT REFUNDABLE:** Yes ☐ No ☒

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

**BIDDING DOCUMENTS/PLANS ARE ALSO ON FILE FOR VIEWING PURPOSES ONLY AT** *(list name and location for each plan room or other entity):*  
\_\_\_\_\_  
\_\_\_\_\_http://purchasing.sc.edu (see Facilities/Construction Solicitation and Awards) Bidders are responsible for obtaining all updates to bidding documents from USC purchasing website.**PRE-BID CONFERENCE?** Yes ☒ No ☐ **MANDATORY ATTENDANCE?** Yes ☐ No ☒**DATE:** 3/6/2013 **TIME:** 10:00AM **PLACE:** 743 Greene St, Columbia, SC, Conference Rm 53**AGENCY:** University of South Carolina, Facilities Business and Finance**NAME OF AGENCY PROCUREMENT OFFICER:** Kay Keisler**ADDRESS:** Street/PO Box: 743 Greene St,City: ColumbiaState: SC ZIP: 29208-**EMAIL:** kkeisler@fmc.sc.edu**TELEPHONE:** 803-777-5812**FAX:** 803-777-8739**BID CLOSING DATE:** 3/20/2013 **TIME:** 2:00PM **LOCATION:** 743 Greene St, Columbia, SC, Conference Rm 53**BID DELIVERY ADDRESSES:****HAND-DELIVERY:** Attn: Kay KeislerUniv. of S. Carolina743 Greene StreetColumbia, SC 29208**MAIL SERVICE:** Attn: Kay KeislerUniv. of S. Carolina,743 Greene StreetColumbia, SC 29208**IS PROJECT WITHIN AGENCY CONSTRUCTION CERTIFICATION?** *(Agency MUST check one)* Yes ☒ No ☐



**REQUEST FOR ADVERTISEMENT**

---

---

APPROVED BY (*Office of State Engineer*): \_\_\_\_\_

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

Replacement Page for  
Instructions to Bidders:  
See AIA Document A701 – 1997 Edition

**OSE FORM 00201****STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS****OWNER:** University of South Carolina**PROJECT NUMBER:** H27-I851-C**PROJECT NAME:** John Welsh Humanities Center Building Fire Alarm Upgrades**PROJECT LOCATION:** Buildings 54 and 55, Columbia, SC**PROCUREMENT OFFICER:** Kay Keisler**1. STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

1.1. These Standard Supplemental Instructions To Bidders amend or supplement Instructions To Bidders (AIA Document A701-1997) and other provisions of Bidding and Contract Documents as indicated below.

1.2. Compliance with these Standard Supplemental Instructions is required by the Office of State Engineer (OSE) for all State projects when competitive sealed bidding is used as the method of procurement.

1.3. All provisions of A701-1997, which are not so amended or supplemented, remain in full force and effect.

1.4. Bidders are cautioned to carefully examine the Bidding and Contract Documents for additional instructions or requirements.

**2. MODIFICATIONS TO A701-1997**

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

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

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

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

2.4. *In Section 2.1.1:*

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

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

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

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

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

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

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

**2.2 CERTIFICATION OF INDEPENDENT PRICE DETERMINATION**

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

(a) By submitting an bid, the bidder certifies that—

(1) The prices in this bid have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other bidder or competitor relating to—

- (i) Those prices;
- (ii) The intention to submit an bid; or
- (iii) The methods or factors used to calculate the prices offered.

(2) The prices in this bid have not been and will not be knowingly disclosed by the bidder, directly or indirectly, to any other bidder or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the bidder to induce any other concern to submit or not to submit an bid for the purpose of restricting competition.

(b) Each signature on the bid is considered to be a certification by the signatory that the signatory—

(1) Is the person in the bidder's organization responsible for determining the prices being offered in this bid, and that the signatory has not participated and will not participate in any action contrary to paragraphs (a)(1) through (a)(3) of this certification; or

(2)(i) Has been authorized, in writing, to act as agent for the bidder's principals in certifying that those principals have not participated, and will not participate in any action contrary to paragraphs (a)(1) through (a)(3) of this certification [As used in this subdivision (b)(2)(i), the term "principals" means the person(s) in the bidder's organization responsible for determining the prices offered in this bid];

(ii) As an authorized agent, does certify that the principals referenced in subdivision (b)(2)(i) of this certification have not participated, and will not participate, in any action contrary to paragraphs (a)(1) through (a)(3) of this certification; and

(iii) As an agent, has not personally participated, and will not participate, in any action contrary to paragraphs (a)(1) through (a)(3) of this certification.

(c) If the bidder deletes or modifies paragraph (a)(2) of this certification, the bidder must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure.

**2.3 DRUG FREE WORKPLACE**

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

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

(a) (1) By submitting an Bid, Bidder certifies, to the best of its knowledge and belief, that-

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

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

(B) Have not, within a three-year period preceding this bid, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in

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

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

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

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

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

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

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

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

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

**2.5 ETHICS CERTIFICATE**

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

**2.6 RESTRICTIONS APPLICABLE TO BIDDERS & GIFTS**

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

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

Officer, *bidder agrees not to give anything to the Owner, any affiliated organizations, or the employees, agents or officials of either, prior to award.* (c) Bidder acknowledges that the policy of the State is that a governmental body should not accept or solicit a gift, directly or indirectly, from a donor if the governmental body has reason to believe the donor has or is seeking to obtain contractual or other business or financial relationships with the governmental body. Regulation 19-445.2165(C) broadly defines the term donor.

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

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

**2.8. Delete the language of Section 3.1.2 and insert the word "Reserved."**

**2.9. In Section 3.1.4, delete the words "and Architect may make" and substitute the words "has made."**

**2.10. Insert the following Section 3.1.5**

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

**2.11. In Section 3.2.2:**

*Delete the words "and Sub-bidders"*

*Delete the word "seven" and substitute the word "ten"*

**2.12. In Section 3.2.3:**

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

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

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

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

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

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

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

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

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

**OSE FORM 00201****STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS****2.16. Insert the following Sections 3.4.5 and 3.4.6:**

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

**3.4.6.** If an emergency or unanticipated event interrupts normal government processes so that bids cannot be received at the government office designated for receipt of bids by the exact time specified in the solicitation, the time specified for receipt of bids will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal government processes resume. In lieu of an automatic extension, an Addendum may be issued to reschedule bid opening. If state offices are closed at the time a pre-bid or pre-proposal conference is scheduled, an Addendum will be issued to reschedule the conference. Useful information may be available at: [http://www.sccmd.org/scgovweb/weather\\_alert.html](http://www.sccmd.org/scgovweb/weather_alert.html)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**OSE FORM 00201****STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS****2.25. Delete Section 4.2.2 and substitute the following:**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

2.33. Insert the following Sections 5.2.2 and 5.2.3:

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

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

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

2.34. Delete Section 6.1 and substitute the following:

**6.1 CONTRACTOR'S RESPONSIBILITY**

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

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

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

2.37. Insert the following Section 6.4

**6.4 CLARIFICATION**

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

2.38. Delete Section 7.1.2 and substitute the following:

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

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

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

**OSE FORM 00201****STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS****2.41. Delete Section 7.2.1 and substitute the following:**

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

**2.42. Delete the language of Section 7.2.2 and insert the word "Reserved."****2.43. Delete the language of Article 8 and insert the following:**

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

**2.44. Insert the following Article 9:****ARTICLE 9 MISCELLANEOUS****9.1 NONRESIDENT TAXPAYER REGISTRATION AFFIDAVIT INCOME TAX WITHHOLDING  
IMPORTANT TAX NOTICE - NONRESIDENTS ONLY**

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

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

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

PLEASE SEE THE "NONRESIDENT TAXPAYER REGISTRATION AFFIDAVIT INCOME TAX WITHHOLDING" FORM (FORM NUMBER I-312) LOCATED AT:  
<http://www.sctax.org/Forms+and+Instructions/withholding/default.htm>.

**9.2 CONTRACTOR LICENSING**

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

**9.3 SUBMITTING CONFIDENTIAL INFORMATION**

For every document Bidder submits in response to or with regard to this solicitation or request, Bidder must separately mark with the word "CONFIDENTIAL" every page, or portion thereof, that Bidder contends contains information that is exempt from public disclosure because it is either (a) a trade secret as defined in Section 30-4-40(a)(1), or (b) privileged & confidential, as that phrase is used in Section 11-35-410. For every document Bidder submits in response to or with regard to this solicitation or request, Bidder must separately mark with the words "TRADE SECRET" every page, or portion thereof, that Bidder contends contains a trade secret as that term is defined by Section 39-8-20 of the Trade Secrets Act. For every document Bidder submits in response to or with regard to this solicitation or request, Bidder must separately mark with the word "PROTECTED" every page, or portion thereof, that Bidder contends is protected by Section 11-35-1810. All markings must be conspicuous; use color, bold, underlining, or some other method in order to conspicuously distinguish the mark from the other text. Do not mark your entire bid as confidential, trade secret, or protected! If your bid, or any part thereof, is improperly marked as confidential or trade

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

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

**9.4 POSTING OF INTENT TO AWARD**

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

**Room or Area of Posting:** Lobby

**Building Where Posted:** Facilities Service Center

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

**WEB site address (if applicable):** <http://purchasing.sc.edu> (see Facilities/Construction Solicitation & Awards)

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

**9.5 PROTEST OF SOLICITATION OR AWARD**

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

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

(a) by email to [protest-ose@mmo.sc.gov](mailto:protest-ose@mmo.sc.gov),

(b) by facsimile at 803-737-0639, or

(c) by post or delivery to 1201 Main Street, Suite 600, Columbia, SC 29201.

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

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

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

**9.7 BUILDER'S RISK INSURANCE**

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

**OSE FORM 00201****STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS****9.8 TAX CREDIT FOR SUBCONTRACTING WITH MINORITY FIRMS**

Pursuant to Section 12-6-3350, taxpayers, who utilize certified minority subcontractors, may take a tax credit equal to 4% of the payments they make to said subcontractors. The payments claimed must be based on work performed directly for a South Carolina state contract. The credit is capped at \$50,000 per year or the total tax liability; whichever is lesser. The taxpayer is eligible to claim the credit for 6 consecutive taxable years beginning with the taxable year in which the credit is first claimed. There is no carry forward of unused credits. The credit may be claimed on Form TC-2, "Minority Business Credit." A copy of the subcontractor's certificate from the Governor's Office of Small and Minority Business (OSMBA) is to be attached to the contractor's income tax return. Taxpayers must maintain evidence of work performed for a State contract by the minority subcontractor. Questions regarding the tax credit and how to file are to be referred to: SC Department of Revenue, Research and Review, Phone: (803) 898-5786, Fax: (803) 898-5888. The subcontractor must be certified as to the criteria of a "Minority Firm" by the Governor's Office of Small and Minority Business Assistance (OSMBA). Certificates are issued to subcontractors upon successful completion of the certification process. Questions regarding subcontractor certification are to be referred to: Governor's Office of Small and Minority Business Assistance, Phone: (803) 734-0657, Fax: (803) 734-2498. Reference: SC §11-35-5010 – Definition for Minority Subcontractor & SC §11-35-5230 (B) – Regulations for Negotiating with State Minority Firms.

**§ 9.9 OTHER SPECIAL CONDITIONS OF THE WORK**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**END OF DOCUMENT**

Replacement Page for

Bid Bond:

See AIA Document A310

# SE-330 – LUMP SUM BID BID FORM

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

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

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

**FOR PROJECT:**      **PROJECT NAME**      Humanities Ctr FA Upgrade  
                         **PROJECT NUMBER**      H27-I851-C

## OFFER

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

§ 2. Pursuant to Section 11-32-3030(1) of the SC Code of Laws, as amended, Bidder has submitted Bid Security as follows in the amount and form required by the Bidding Documents:

☐ Bid Bond with Power of Attorney      ☐ Electronic Bid Bond      ☐ Cashier's Check

(Bidder check one)

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

**ADDENDUM No:** \_\_\_\_\_

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

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

§ 6.1 **BASE BID WORK** *(as indicated in the Bidding Documents and generally described as follows):* Remove existing fire alarm and detection system and install new fully addressable fire alarm and detection system per plans and specifications.

\_\_\_\_\_, which sum is hereafter called the Base Bid.  
(Bidder - insert Base Bid Amount on line above)

**SE-330 – LUMP SUM BID  
BID FORM**

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

**ALTERNATE # 1** (Brief Description): \_\_\_\_\_

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

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

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

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

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

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

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

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

# SE-330 – LUMP SUM BID BID FORM

§ 7. LISTING OF PROPOSED SUBCONTRACTORS PURSUANT TO SECTION 3020(b)(i), CHAPTER 35, TITLE 11 OF THE SOUTH CAROLINA CODE OF LAWS, AS AMENDED – (See Instructions on the following page BF-3A)

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

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

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



**SE-330 – LUMP SUM BID  
BID FORM**

**INSTRUCTIONS FOR  
SUBCONTRACTOR LISTING**

1. Section 7 of the Bid Form sets forth a list of subcontractor specialties for which bidder is required to identify by name the subcontractor(s) Bidder will use to perform the work of each listed specialty. Bidder must identify only the subcontractor(s) who will perform the work and no others.
2. For purposes of subcontractor listing, a Subcontractor is an entity who will perform work or render service to the prime contractor to or about the construction site. Material suppliers, manufacturers, and fabricators that will not perform physical work at the site of the project but will only supply materials or equipment to the bidder or proposed subcontractor(s) are not subcontractors and Bidder should not insert their names in the spaces provided on the bid form. Likewise, Bidder should not insert the names of sub-subcontractors in the spaces provided on the bid form but only the names of those entities with which bidder will contract directly.
3. Bidder must only insert the names of subcontractors who are qualified to perform the work of the listed specialties as specified in the Bidding Documents and South Carolina Licensing Laws.
4. If under the terms of the Bidding Documents, Bidder is qualified to perform the work of a specialty listed and Bidder does not intend to subcontract such work but to use Bidder's own employees to perform such work, the Bidder must insert its own name in the space provided for that specialty.
5. If Bidder intends to use multiple subcontractors to perform the work of a single specialty listing, Bidder must insert the name of each subcontractor Bidder will use, preferably separating the name of each by the word "and". If Bidder intends to use both his own employees to perform a part of the work of a single specialty listing and to use one or more subcontractors to perform the remaining work for that specialty listing, bidder must insert his own name and the name of each subcontractor, preferably separating the name of each with the word "and".
6. Bidder may not list subcontractors in the alternative nor in a form that may be reasonably construed at the time of bid opening as a listing in the alternative. A listing that requires subsequent explanation to determine whether or not it is a listing in the alternative is non-responsive. If bidder intends to use multiple entities to perform the work for a single specialty listing, bidder must clearly set forth on the bid form such intent. Bidder may accomplish this by simply inserting the word "and" between the name of each entity listed for that specialty. Owner will reject as non-responsive a listing that contains the names of multiple subcontractors separated by a blank space, the word "or", a virgule (that is a /), or any separator that the Owner may reasonably interpret as a listing in the alternative.
7. If Bidder is awarded the contract, bidder must, except with the approval of the owner for good cause shown, use the listed entities to perform the work for which they are listed.
8. If bidder is awarded the contract, bidder will not be allowed to substitute another entity as subcontractor in place of a subcontractor listed in Section 7 of the Bid except for one or more of the reasons allowed by the SC Code of Laws.
9. Bidder's failure to insert a name for each listed specialty subcontractor will render the Bid non-responsive.

## **SE-330 – LUMP SUM BID BID FORM**

**§ 8. LIST OF MANUFACTURERS, MATERIAL SUPPLIERS, AND SUBCONTRACTORS OTHER THAN SUBCONTRACTORS LISTED IN SECTION 7 ABOVE (FOR INFORMATION ONLY):** Pursuant to instructions in the Invitation for Bids, if any, Bidder will provide to Owner upon the Owner's request and within 24 hours of such request, a listing of manufacturers, material suppliers, and subcontractors, other than those listed in Section 7 above, that Bidder intends to use on the project. Bidder acknowledges and agrees that this list is provided for purposes of determining responsibility and not pursuant to the subcontractor listing requirements of SC Code Ann § 11-35-3020(b)(i).

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

- a. **CONTRACT TIME:** Bidder agrees that the Date of Commencement of the Work shall be established in a Notice to Proceed to be issued by the Owner. Bidder agrees to substantially complete the Work within 240 calendar days from the Date of Commencement, subject to adjustments as provided in the Contract Documents.
- b. **LIQUIDATED DAMAGES:** Bidder further agrees that from the compensation to be paid, the Owner shall retain as Liquidated Damages the sum of \$250.00 for each calendar day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted time for Substantial Completion as provided in the Contract Documents. This sum is intended by the parties as the predetermined measure of compensation for actual damages, not as a penalty for nonperformance.

### **§ 10. AGREEMENTS**

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

### **§ 11. ELECTRONIC BID BOND**

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

**Electronic Bid Bond Number:** \_\_\_\_\_

**Signature and Title:** \_\_\_\_\_

**SE-330 – LUMP SUM BID  
BID FORM**

**BIDDER'S TAXPAYER IDENTIFICATION**

FEDERAL EMPLOYER'S IDENTIFICATION NUMBER: \_\_\_\_\_

*OR*

SOCIAL SECURITY NUMBER: \_\_\_\_\_

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

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

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

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

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

**SIGNATURE**

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

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

**BY:** \_\_\_\_\_  
(Signature)

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

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

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

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

Replacement Page for  
Standard Form of Agreement between Owner  
and Contractor:

See AIA Document A101 – 2007 Edition

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

---

**OWNER:** University of South Carolina

**PROJECT NUMBER:** H27-I851-C

**PROJECT NAME:** John Welsh Humanities Center Building Fire Alarm Upgrades

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

**1.1.** These Standard Modifications amend or supplement the *Standard Form of Agreement Between Owner and Contractor* (AIA Document A101-2007) and other provisions of Bidding and Contract Documents as indicated below.

**1.2.** All provisions of A101-2007, which are not so amended or supplemented, remain in full force and effect.

**2. MODIFICATIONS TO A101**

**2.1.** *Insert the following at the end of Article 1:*

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

**2.2.** *Delete Section 3.1 and substitute the following:*

**3.1** The Date of Commencement of the Work shall be the date fixed in a Notice to Proceed issued by the Owner. The Owner shall issue the Notice to Proceed to the Contractor in writing, no less than seven days prior to the Date of Commencement. Unless otherwise provided elsewhere in the contract documents, and provided the contractor has secured all required insurance and surety bonds, the contractor may commence work immediately after receipt of the Notice to Proceed.

**2.3.** *Delete Section 3.2 and substitute the following:*

**3.2** The Contract Time shall be measured from the Date of Commencement as provided in Section 9(a) of the Bid Form (SE-330) for this Project. Contractor agrees that if the Contractor fails to achieve Substantial Completion of the Work within the Contract Time, the Owner shall be entitled to withhold or recover from the Contractor liquidated damages in the amounts set forth in Section 9(b) of the Bid Form (SE-330, subject to adjustments of this Contract Time as provided in the Contract Documents.

**2.4.** *In Section 5.1.1, insert the words “and Owner” after the phrase “Payment submitted to the Architect.”*

**2.5.** *Delete Section 5.1.3 and substitute the following:*

**5.1.3** The Owner shall make payment of the certified amount to the Contractor not later than 21 days after receipt of the Application for Payment.

**2.6.** *In Section 5.1.6, Insert the following after the phrase “Subject to other provisions of the Contract Documents”:*

and subject to Title 12, Chapter 8, Section 550 of the South Carolina Code of Laws, as amended (Withholding Requirements for Payments to Non-Residents)

*In the spaces provided in Sub-Sections 1 and 2 for inserting the retainage amount, insert “three and one-half percent (3.5%).”*

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

**2.7.** *In Section 5.1.8, delete the word "follows" and the colon and substitute the following:*

set forth in S.C. Code Ann. § 11-35-3030(4).

**2.8.** *In Section 5.1.9, delete the words "Except with the Owner's prior approval, the" before the word "Contractor."*

**2.9.** *In Section 5.2.2, delete the number 30 and substitute the number 21, delete everything following the words "Certificate for Payment" and place a period at the end of the resulting sentence.*

**2.10.** *Delete the language of Sections 6.1 and 6.2 and substitute the word "Reserved" for the deleted language of each Section.*

**2.11.** *Delete the language of Section 8.2 and substitute the word "Reserved."*

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

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

**Name:** Tom Opal

**Title:** Senior Project Manager

**Address:** 743 Greene St., Columbia, SC 29208

**Telephone:** 803-777-7076 **FAX:** 803-777-0484

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

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

**Name:** Peter L. Fisher, P.E.

**Title:** Project Manager

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

**Telephone:** 803-777-9346 **FAX:** 803-777-0484

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

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

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

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

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

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

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

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

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

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

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

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

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

Telephone: \_\_\_\_\_ FAX: \_\_\_\_\_

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

- 2.14. *Add the following Section 8.6.1:*

8.6.1 The Architect's representative:

Name: Chris Butts, PE, SET, CFPS

Title: Senior Fire Protection Engineer / Code Consultant

Address: 2170 Ashley Phosphate Road, Suite 504, Charleston, SC 29406

Telephone: 843-553-6670 FAX: 843-553-0755

Email: chris.butts@obg.com

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

Invitation for Construction Bids (SE-310)

Instructions to Bidders (AIA Document A701-1997)

Standard Supplemental Instructions to Bidders (OSE Form 00201)

Contractor's Bid (Completed SE-330)

Notice of Intent to Award (Completed SE-370)

Certificate of procurement authority issued by the SC Budget & Control Board

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

**END OF DOCUMENT**

Replacement Page for  
General Conditions of the Contract for  
Construction:  
See AIA Document A201 – 2007 Edition



# OSE FORM 00811

## STANDARD SUPPLEMENTARY CONDITIONS

---

**OWNER:** University of South Carolina

**PROJECT NUMBER:** H27-J851-C

**PROJECT NAME:** John Welsh Humanities Center Fire Alarm Upgrades

### 1 GENERAL CONDITIONS

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

### 2 STANDARD SUPPLEMENTARY CONDITIONS

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

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

### 3 MODIFICATIONS TO A201-2007

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

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

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

3.3 *Add the following Section 1.1.9:*

#### 1.1.9 NOTICE TO PROCEED

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

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

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

3.5 *Delete Section 1.5.1 and substitute the following:*

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

---

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS****3.13** *Insert the following at the end of Section 3.2.1:*

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

**3.14** *In the third sentence of Section 3.2.4, insert the word "latent" before the word "errors."***3.15** *In the last sentence of Section 3.3.1, insert the words "by the Owner in writing" after the word "instructed."***3.16** *Delete the third and fourth sentences of Section 3.5 and substitute the following sentences:*

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

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

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

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

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

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

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

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

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

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

acceptable to the Owner,

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

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

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

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

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

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

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

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

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

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

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

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

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

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

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

---

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

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

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

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

including loss of use resulting therefrom,

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

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

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

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

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

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

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

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

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

Work completed and correlated with the

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

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

---

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

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

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

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

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

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

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

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

**3.41** *In the first sentence of Section 5.2.3, delete the words "...or Architect..." in the two places they appear.***3.42** *Delete the words "...or Architect..." in the in the first sentence of Section 5.2.4 and insert the following sentence at the end of Section 5.2.4:*

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

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

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

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

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise herein or in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

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

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

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

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

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

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

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

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

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

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

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

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

7.2.1 A Change Order is a written instrument prepared by the Architect (using State Form SE-480 "Construction Change Order") and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

- .1 The change in the Work;

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

---

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

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

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

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

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

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

**3.51** *Delete 7.3.3 and substitute the following:***7.3.3 PRICE ADJUSTMENTS**

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

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

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

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

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



**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

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

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

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

**3.54** *Add the following Sections 7.5 and 7.6:***7.5 AGREED OVERHEAD AND PROFIT RATES**

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

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

**7.6 PRICING DATA AND AUDIT****§ 7.6.1 Cost or Pricing Data.**

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

**§ 7.6.2** Cost or pricing data means all facts that, as of the date specified by the parties, prudent buyers and sellers would reasonably expect to affect price negotiations significantly. Cost or pricing data are factual, not judgmental; and are verifiable. While they do not indicate the accuracy of the prospective contractor's judgment about estimated

future costs or projections, they do include the data forming the basis for that judgment. Cost or pricing data are more than historical accounting data; they are all the facts that can be reasonably expected to contribute to the soundness of estimates of future costs and to the validity of determinations of costs already incurred.

**§ 7.6.3 Records Retention.**

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS****3.55** Delete Section 8.2.2 and substitute the following:

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

**3.56** Delete Section 8.3.1 and substitute the following:

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

**3.57** Insert the following at the end of Section 9.1:

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

**3.58** Delete Section 9.2 and substitute the following:**9.2 SCHEDULE OF VALUES**

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

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

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

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

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

---

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

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

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

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

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

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

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

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

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

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

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

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

- 3.64** *Delete Section 9.7 and substitute following:*

**9.7 FAILURE OF PAYMENT**

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

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

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

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

- 3.67** *Delete Section 9.8.3 and substitute the following:*

**9.8.3.1** Upon receipt of the Contractor's list, the Architect, with the Owner and any other person the Architect or the Owner choose, will make an inspection on a date and at a time mutually agreeable to the Architect, Owner, and Contractor, to determine whether the Work or designated portion thereof is substantially complete. The Contractor shall furnish access for the inspection and testing as provided in this Contract. The inspection shall include a

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

demonstration by the Contractor that all equipment, systems and operable components of the Work function properly and in accordance with the Contract Documents. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion. If more than one Substantial Completion inspection is required, the Contractor shall reimburse the Owner for all costs of reinspections or, at the Owner's option, the costs may be deducted from payments due to the Contractor.

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

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

**3.69** *In the first sentence of Section 9.9.1, delete the words "Section 11.3.1.5" and substitute the words "Section 11.3.1.3."*

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

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

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

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

---

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

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

- 3.73** Delete Section 9.10.5 and substitute the following:

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

- 3.74** Add the following Section 9.10.6:

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

- 3.75** Delete Section 10.3.1 and substitute the following:

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

- 3.76** Insert the following at the end of Section 10.3.2:

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

- 3.77** Delete Section 10.3.3 and substitute the following:

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

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

In addition to its obligations under Section 3.18, the

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

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

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

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

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

**(1) COMMERCIAL GENERAL LIABILITY:**

(a) General Aggregate (per project) .....	<u>\$1,000,000</u>
(b) Products/Completed Operations .....	<u>\$1,000,000</u>
(c) Personal and Advertising Injury .....	<u>\$1,000,000</u>
(d) Each Occurrence .....	<u>\$1,000,000</u>
(e) Fire Damage (Any one fire) .....	<u>\$50,000</u>
(f) Medical Expense (Any one person) .....	<u>\$5,000</u>

**(2) BUSINESS AUTO LIABILITY (including All Owned, Non-owned, and Hired Vehicles):**

(a) Combined Single Limit .....	<u>\$1,000,000</u>
---------------------------------	--------------------

**(3) WORKER'S COMPENSATION:**

(a) State Statutory .....	
(b) Employers Liability .....	<u>\$100,000</u> Per Acc.
	<u>\$500,000</u> Disease, Policy Limit
	<u>\$100,000</u> Disease, Each Employee

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

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

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

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

Prior to commencement of the Work, and thereafter upon renewal or replacement of each required policy of insurance, Contractor shall provide to the Owner a signed, original certificate of liability insurance (ACORD 25). Consistent with this Section 11.1, the certificate shall identify the types of insurance, state the limits of liability for each type of coverage, name the Owner a Consultants as Certificate Holder, provide that the general aggregate limit applies per project, and provide that coverage is written on an occurrence basis. Both the certificates and the

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

endorsements must be received directly from either the Contractor's insurance agent or the insurance company. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, naming the Owner as an additional insured for claims made under the Contractor's completed operations, and otherwise meeting the above requirements, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

- 3.83** *Delete Section 11.1.4 and substitute the following:*

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

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

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

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

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

- 3.87** *Delete Section 11.3.2 and substitute the following:*

**11.3.2 BOILER AND MACHINERY INSURANCE**

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

- 3.88** *Delete Section 11.3.3 and substitute the following:*

**11.3.3 LOSS OF USE INSURANCE**

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

- 3.89** *Delete Section 11.3.4 and substitute the following:*

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

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

- 3.91** *Delete Section 11.3.6 and substitute the following:*

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS****3.92** Delete the first sentence of Section 11.3.7 and substitute the following:

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

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

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

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

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

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

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

**3.96** Delete Section 11.4.1 and substitute the following:

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

**3.97** Delete Section 11.4.2 and substitute the following:

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

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



**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

---

**3.98** *Add the following Sections 11.4.3 and 11.4.4:*

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

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

**3.99** *Delete Section 12.1.1 and substitute the following:*

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

**3.100** *In Section 12.2.2.1, delete the words "and to make a claim for breach of warranty" at the end of the third sentence.***3.101** *In Section 12.2.2.3, add the following to the end of the sentence:*

unless otherwise provided in the Contract Documents.

**3.102** *Insert the following at the end of Section 12.2.4:*

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

**3.103** *Delete Section 13.1 and substitute the following:***13.1 GOVERNING LAW**

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

**3.104** *Delete Section 13.2, including its Sub-Sections 13.2.1 and 13.2.2, and substitute the following:***13.2 SUCCESSORS AND ASSIGNS**

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

**3.105** *Delete Section 13.3 and substitute the following:***13.3 WRITTEN NOTICE**

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

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

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

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

Unless expressly provided otherwise,

- 3.107** *Add the following Section 13.4.3:*

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

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

- 3.108** *Delete Section 13.6 and substitute the following:*

**13.6 INTEREST**

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

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

- 3.110** *Add the following Sections 13.8 through 13.16:*

**13.8 PROCUREMENT OF MATERIALS BY OWNER**

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

**13.9 INTERPRETATION OF BUILDING CODES**

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS****13.10 MINORITY BUSINESS ENTERPRISES**

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

**13.11 SEVERABILITY**

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

**13.12 ILLEGAL IMMIGRATION**

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

**13.13 SETOFF**

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

**13.14 DRUG-FREE WORKPLACE**

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

**13.15 FALSE CLAIMS**

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

**13.16 NON-INDEMNIFICATION:**

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

**3.111 Delete Section 14.1.1 and substitute the following:**

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

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires substantially all Work to be stopped; or

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

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

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

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

**3.113** *In Section 14.1.4, replace the word "repeatedly" with the word "persistently."***3.114** *Delete Section 14.2.1 and substitute the following:***14.2.1** The Owner may terminate the Contract if the Contractor

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

**3.115** *In Section 14.2.2, delete the parenthetical statement ", upon certification by the Initial Decision Maker that sufficient cause exists to justify such action," immediately following the word "Owner" in the first line.***3.116** *In Section 14.2.4, replace the words "Initial Decision Maker" with the word "Architect"***3.117** *Add the following Section 14.2.5:*

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

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

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

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

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

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

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

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work;

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders; and
- .4 complete the performance of the Work not terminated, if any.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS****3.126** *Insert the following at the end of Section 15.1.5.1:*

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

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

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

**3.128** *Delete Section 15.1.6 and substitute the following:***15.1.6 CLAIMS FOR LISTED DAMAGES**

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

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

**15.1.6.2** For the Contractor, listed damages are (i) lost revenue and profit, (ii) losses resulting from injury to business or reputation, (iii) additional or escalated overhead and administration expenses, (iv) additional financing costs, (v) attorney's fees, (vi) any interest, except to the extent allowed by Section 13.6 (Interest); (vii) unamortized equipment costs; and, (viii) losses incurred by subcontractors for the types of damages the Contractor has waived as against the Owner. Without limitation, this mutual waiver is applicable to all damages due to either party's termination in accordance with Article 14. Nothing contained in this Section shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents. This mutual waiver is not applicable to amounts due or obligations under Section 3.18 (Indemnification).

**3.129** *Add the following Section 15.1.7:***15.1.7 WAIVER OF CLAIMS AGAINST THE ARCHITECT**

Notwithstanding any other provision of the Contract Documents, including Section 1.2.1, but subject to a duty of good faith and fair dealing, the Contractor waives all claims against the Architect and any other design professionals who provide design and/or project management services to the Owner, either directly or as independent contractors or subcontractors to the Architect, for listed damages arising out of or relating to this Contract. The listed damages are (i) lost revenue and profit, (ii) losses resulting from injury to business or reputation, (iii) additional or escalated overhead and administration expenses, (iv) additional financing costs, (v)

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

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

- 3.130** *Delete the language of Sections 15.2, 15.3, and 15.4, including all Sub-Sections, and substitute the word "Reserved" for the deleted language of each Section and Sub-Section.*
- 3.131** *Add the following Sections 15.5 and 15.6 with their sub-sections:*

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

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

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

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

**15.5.4** If the Architect requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Architect when the response or supporting data will be furnished or (3) advise the Architect that all supporting data has already been provided. Upon receipt of the response or supporting data, the Architect will render an initial decision in accordance with Section 15.5.5.

**15.5.5** The Architect will render an initial decision in writing; (1) stating the reasons therefor; and (2) notifying the parties of any change in the Contract Sum or Contract Time or both. The Architect will deliver the initial decision to the parties within two weeks of receipt of any response or supporting data requested pursuant to Section 16.4, or within such longer period as may be mutually agreeable to the parties. If the parties accept the initial decision, the Architect shall prepare a Change Order with appropriate supporting documentation for the review and approval of the parties and the Office of State Engineer. If either the Contractor, Owner, or both, disagree with the initial decision, the Contractor and Owner shall proceed with dispute resolution in accordance with the provisions of Section 15.6.

**15.5.6** In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

**15.6 DISPUTE RESOLUTION**

**15.6.1** If a claim is not resolved pursuant to Section 15.5 to the satisfaction of either party, both parties shall attempt to resolve the dispute at the field level through discussions between Contractor's Representative and Owner's Representative. If a dispute cannot be resolved through Contractor's Representative and Owner's Representative, then the Contractor's Senior Representative and the Owner's Senior Representative, upon the request of either party, shall meet as soon as conveniently possible, but in no case later than twenty-one days after such a request is made, to attempt to resolve such dispute. Prior to any meetings between the Senior Representatives, the parties will exchange relevant information that will assist the parties in resolving their dispute. The meetings required by this Section are a condition precedent to resolution pursuant to Section 15.6.2.

**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

**15.6.2** If after meeting in accordance with the provisions of Section 15.6.1, the Senior Representatives determine that the dispute cannot be resolved on terms satisfactory to both the Contractor and the Owner, then either party may submit the dispute by written request to South Carolina's Chief Procurement Officer for Construction (CPOC). Except as otherwise provided in Article 15, all claims, claims, or controversies relating to the Contract shall be resolved exclusively by the appropriate Chief Procurement Officer in accordance with Title 11, Chapter 35, Article 17 of the South Carolina Code of Laws, or in the absence of jurisdiction, only in the Court of Common Pleas for, or in the absence of jurisdiction a federal court located in, Richland County, State of South Carolina. Contractor agrees that any act by the State regarding the Contract is not a waiver of either the State's sovereign immunity or the State's immunity under the Eleventh Amendment of the United State's Constitution.

**15.6.3** If any party seeks resolution to a dispute pursuant to Section 15.6.2, the parties shall participate in non-binding mediation to resolve the claim. If the claim is governed by Title 11, Chapter 35, Article 17 of the South Carolina Code of Laws as amended and the amount in controversy is \$100,000.00 or less, the CPOC shall appoint a mediator, otherwise, the mediation shall be conducted by an impartial mediator selected by mutual agreement of the parties, or if the parties cannot so agree, a mediator designated by the American Arbitration Association ("AAA") pursuant to its Construction Industry Mediation Rules. The mediation will be governed by and conducted pursuant to a mediation agreement negotiated by the parties or, if the parties cannot so agree, by procedures established by the mediator.

**15.6.4** Without relieving any party from the other requirements of Sections 15.5 and 15.6, either party may initiate proceedings in the appropriate forum prior to initiating or completing the procedures required by Sections 15.5 and 15.6 if such action is necessary to preserve a claim by avoiding the application of any applicable statutory period of limitation or repose.

**15.6.5 SERVICE OF PROCESS**

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

**3.132 Add the following Article 16:****ARTICLE 16 PROJECT-SPECIFIC REQUIREMENTS AND INFORMATION****16.1. Inspection Requirements:** *(Indicate the inspection services required by the Contract)*

- ☒ Special Inspections are required and are not part of the Contract Sum. *(see section 01400)*  
☐ Building Inspections are required and are not part of the Contract Sum. *(see section 01400)*  
☐ Building Inspections are required and are part of the Contract Sum. The inspections required for this Work are : *(Indicate which services are required and the provider)*

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

Remarks: \_\_\_\_\_



**OSE FORM 00811****STANDARD SUPPLEMENTARY CONDITIONS**

---

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

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

NONE

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

Provide a complete, full-size set of record installation drawings.

Provide a complete electronic CAD set of record installation drawings.

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

All submittals listed in Specification Sections 07841 and 07850 shall be submitted to the USC Fire Marshal for review and approval prior to the start of installation. Provide a four (4) complete sets of each submittal.

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

NONE

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

Clean up work areas daily.

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

NONE

USC SUPPLEMENTAL GENERAL CONDITIONS  
FOR CONSTRUCTION PROJECTS

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

9. Contractor will be responsible for providing its own temporary toilet facilities, unless prior arrangements are made with the USC Project Manager.
10. Use of USC communications facilities (telephones, computers, etc.) by the Contractor is prohibited, unless prior arrangements are made with the USC Project Manager.
11. For all projects over \$100,000, including IDC's, an SE-395, Contractor Performance Evaluation, will be completed by the USC Project Manager and reviewed with the GC at the beginning of the project and a copy given to the GC. At the end of the project the form will be completed and a Construction Performance rating will be established.
12. Contractor is responsible for removal of all debris from the site, and is required to provide the necessary dumpsters which will be emptied at least 1 times per week. Construction waste must not be placed in University dumpsters. THE CONSTRUCTION SITE MUST BE THOROUGHLY CLEANED WITH ALL TRASH PICKED UP AND PROPERLY DISPOSED OF ON A DAILY BASIS AND THE SITE MUST BE LEFT IN A SAFE AND SANITARY CONDITION EACH DAY. THE UNIVERSITY WILL INSPECT JOB SITES REGULARLY AND WILL FINE ANY CONTRACTOR FOUND TO BE IN VIOLATION OF THIS REQUIREMENT AN AMOUNT OF UP TO \$1,000 PER VIOLATION.
13. **Contractor must provide all O&M manuals, as-built drawings, and training of USC personnel on new equipment, controls, etc. prior to Substantial Completion. Final payment will not be made until this is completed.**
14. The contractor will comply with all regulations set forth by OSHA and SCDHEC. Contractor must also adhere to USC's internal policies and procedures (available by request). As requested, the contractor will submit all Safety Programs and Certificates of Insurance to the University for review.
15. Tree protection fencing is required to protect existing trees and other landscape features to be preserved within a construction area. The limits of this fence will be evaluated for each situation with the consultant, USC Arborist and USC Project Manager. The tree protection fence shall be 5' high chain link fence unless otherwise approved by USC Project Manager. No entry or materials storage will be allowed inside the tree protection zone. A 4" layer of mulch shall be placed over the tree protection area to maintain moisture in the root zone.
16. Where it is necessary to cross walks, tree root zones (i.e., under canopy) or lawns the following measures shall be taken: For single loads up to 9,000 lbs., a 3/4" minimum plywood base shall be placed over areas impacted. For single loads over 9,000 lbs., two layers of 3/4" plywood is required.
17. For projects requiring heavy loads to cross walks tree root zones or lawns. A construction entry road consisting of 10' X 16' oak logging mats on 12" coarse, chipped, hardwood base. Mulch and logging mats shall be supplemented throughout the project to keep

Updated: July 15, 2011

matting structurally functional.

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

#### **Campus Vehicle Expectations**

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

**Performance Bond**

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

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

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

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

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

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

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

Name: University of South Carolina

Address: 743 Greene Street  
Columbia, SC 29208

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

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

State Project Name: John Welsh Humanities Ctr. Bldg. FA Upgr

State Project Number: H27-I851-C

Brief Description of Awarded Work, as found on the SE-330, Bid Form: Remove existing fire alarm and detection system and install new fully addressable fire alarm and detection system per plans and specifications

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

Name: O'Brien & Gere

Address: 2170 Ashley Phosphate Rd., Suite 504  
Charleston, SC 29406

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

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

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

CONTRACTOR

SURETY

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

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

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

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

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

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

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

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

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

**Performance Bond****Performance Bond****NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT:**

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

**Labor and Material Payment Bond**

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

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

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

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

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

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

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

Name: University of South Carolina

Address: 743 Greene Street  
Columbia, SC 29208

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

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

Project Name: John Welsh Humanities Ctr. Bldg. FA Upgr

Project Number: H27-I851-C

Brief Description of Awarded Work, as found on the SE-330, Bid Form: Remove existing fire alarm and detection system and install new fully addressable fire alarm and detection system per plans and specifications

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

Name: O'Brien & Gere

Address: 2170 Ashley Phosphate Rd., Suite 504  
Charleston, SC 29406

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

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

DATED this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ BOND NUMBER \_\_\_\_\_  
*(shall be no earlier than Date of Contract)*

CONTRACTOR

SURETY

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

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

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

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

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

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

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

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

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

**Labor and Material Payment Bond****NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT:**

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Agency to pay for all labor, materials and equipment required for use in the performance of the Contract, which is incorporated herein by reference.
2. With respect to the Agency, this obligation shall be null and void if the Contractor:
  - 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants; and
  - 2.2 Defends, indemnifies and holds harmless the Agency from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Contract.
3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
4. With respect to Claimants, and subject to the provisions of Title 29, Chapter 5 and the provisions of §11-35-3020(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.



SECTION 07841

THROUGH-PENETRATION FIRESTOP SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Penetrations in fire-resistance-rated walls.
  - 2. Penetrations in horizontal assemblies.
  - 3. Penetrations in smoke barriers.

1.2 DEFINITIONS

- A. AHJ: Authority Having Jurisdiction
- B. NFPA: National Fire Protection Association
- C. NICET: National Institute for Certification in Engineering Technologies.
- D. UL: Underwriters Laboratories
- E. FM: Factory Mutual

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Schedule: For each penetration firestopping system. Include location and design designation of qualified testing and inspecting agency.
  - 1. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Installer Certificates: From Installer indicating penetration firestopping has been installed in compliance with requirements and manufacturer's written recommendations.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for penetration firestopping.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."
- B. Installer Qualifications: A firm experienced in installing penetration firestopping similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer's willingness to sell its penetration firestopping products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.
- C. Fire-Test-Response Characteristics: Penetration firestopping shall comply with the following requirements:
  - 1. Penetration firestopping tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
  - 2. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems complying with the following requirements:
    - a. Penetration firestopping products bear classification marking of qualified testing and inspecting agency.
    - b. Classification markings on penetration firestopping correspond to designations listed by the following:
      - 1) UL in its "Fire Resistance Directory."
      - 2) FM Global in its "Building Materials Approval Guide."

## 1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install penetration firestopping when ambient or substrate temperatures are outside limits permitted by penetration firestopping manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

## 1.7 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping.
- C. Notify Owner's testing agency at least seven days in advance of penetration firestopping installations; confirm dates and times on day preceding each series of installations.

## PART 2 - PRODUCTS

## 2.1 PENETRATION FIRESTOPPING

- A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
  - 1. Fire-resistance-rated walls include fire walls, fire-barrier walls, smoke-barrier walls and fire partitions.
  - 2. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
  - 1. Horizontal assemblies include floors, floor/ceiling assemblies and ceiling membranes of roof/ceiling assemblies.
  - 2. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
  - 3. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
- D. Penetrations in Smoke Barriers: Provide penetration firestopping with ratings determined per UL 1479.
- E. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- F. VOC Content: Penetration firestopping sealants and sealant primers shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
  - 1. Sealants: 250 g/L.
  - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
  - 3. Sealant Primers for Porous Substrates: 775 g/L.
- G. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.
  - 1. Permanent forming/damming/backing materials, including the following:
    - a. Slag-wool-fiber or rock-wool-fiber insulation.
    - b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
    - c. Fire-rated form board.

d. Fillers for sealants.

2.2 FILL MATERIALS

- A. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- B. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- C. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.
- D. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Clean out openings immediately before installing penetration firestopping to comply with manufacturer's written instructions and with the following requirements:
  - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping.
  - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping. Remove loose particles remaining from cleaning operation.
  - 3. Remove laitance and form-release agents from concrete.
- B. Priming: Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

- A. General: Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

- B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
  - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.
- C. Install fill materials for firestopping by proven techniques to produce the following results:
  - 1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
  - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
  - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

#### 3.4 CLEANING AND PROTECTION

- A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping is without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping and install new materials to produce systems complying with specified requirements.
- C. END OF SECTION

SECTION 16010

ELECTRICAL - GENERAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide complete, tested and fully functional electrical systems as shown on the Drawings and as specified herein.
- B. Electrical equipment and installed systems shall be suitable for the application, shall be safe for the intended use, shall be fully rated for the available fault current, and shall conform to local building codes and statutory requirements.

1.2 RELATED DOCUMENTS

- A. The Drawings and General Provisions of the Contract apply to this Section.
- B. Electrical requirements specified in this Section apply to electrical equipment and materials described in other Sections of Division 16.

1.3 SCOPE OF WORK

- A. The work includes, but is not limited to, the work described in other Sections of Division 16, and the following:
  - 1. Removal and/or relocation of existing equipment
  - 2. Temporary lighting and power as required for construction and as hereinafter specified
  - 3. Field wiring for equipment provided under other Sections of the Specification
  - 4. Thorough cleaning of all equipment prior to energization
  - 5. Acceptance testing of all equipment installed under this Division
  - 6. Protection of all equipment under this Division until the final acceptance of the job.
- B. Coordinate Division 16 requirements with work described in other Divisions of the Specification.
- C. Submit pre-construction submittals, shop drawings, product data, samples, design data, test reports, certificates, manufacturer's instructions, manufacturer's field reports, operation and maintenance data, closeout submittals and other specified documents to the Engineer for review and approval as described in the General Provisions, Special Provisions, this Section, and in other Sections of Division 16.
- D. Perform electrical acceptance tests described in Part 3 of other Division 16 Sections.

## 1.4 PROJECT CONDITIONS

- A. Ambient temperature, humidity, and elevation ranges:
1. Ambient Temperature: 0 to 40 deg C.
  2. Humidity: Less than 90 percent (non-condensing).
  3. Altitude: Not exceeding 3300 feet (1000 m).
- B. Product Selection for Restricted Space: Drawings show allowable space to scale for anticipated equipment sizes. Comply with NEC requirements for working clearances and with manufacturer's recommendations for access for maintenance. Notify the Engineer if insufficient space is available for available products.

## 1.5 DEFINITIONS

- A. In addition to the Definitions in the General Provisions, the following definitions apply to Division 16:
1. Acceptance Tests: power distribution and control equipment testing performed in conformance with NETA Acceptance Testing Specification
  2. AHJ: The statutory Authority Having Jurisdiction as defined in NEC Article 100 for enforcement of legally required compliance to local codes, standards, and ordinances.
  3. ANSI: American National Standards Institute
  4. AEIC: Association of Edison Illuminating Companies
  5. ASQ: American Society for Quality
  6. AWG: American Wire Gauge
  7. CFR: Code of Federal Regulations
  8. Cable: an assembly of insulated conductors
  9. Control panel: an electrical enclosure housing control logic devices and an operator control interface
  10. Commissioning: the process of testing system performance after the sequential steps of installation, testing, energization, startup (including initial adjustment and de-bugging) and functional testing of individual pieces of equipment have all been completed
  11. Contract: as used in the Electrical Specification, includes all Contract documents including Specifications and Appendices, Drawings, Addenda, and Change Orders
  12. ICEA: Insulated Cable Engineers Association
  13. Equipment: a general term including materials, fittings, devices, appliances, fixtures, apparatus, and the like, used as part of, or in connection with, an electrical installation (OSHA Section 29 CFR 1910.399(46) definition)
  14. FM: Factory Mutual, Inc.
  15. Field wiring: on-site installation of raceways & conductors to connect equipment in accordance with approved drawings
  16. Field test: electrical test carried out on-site
  17. Fail-safe: selection of control devices and contacts in a manner which results in safe shutdown of the equipment whenever one of the following events occurs:
    - a. Power supply failure
    - b. Loss of remote control RUN command (normal configuration: contacts close to run equipment)

- c. Intentional and unintentional disconnection of device (normal configuration: contacts open to shut down equipment)
  - d. High contact resistance or high resistance connection
  - e. Loss of 4-20mADC signal
  - f. Definite-time sequence takes too long, e.g., reduced voltage motor starter fails to make transition from START mode to RUN mode after a reasonable time
  - g. Defined sequence does not occur, e.g., there is no flow from a motor driven pump within a reasonable time after the motor starter contactor is energized.
- 18. Furnish and install: same as "Provide" below.
  - 19. Functional testing: verification of the satisfactory performance of control logic, with due attention to the functionality of equipment protective devices, for example, overload relays, temperature switches, pressure switches, flow switches, and similar devices, under actual operating conditions
  - 20. HV: high voltage, operating voltage over 600V (NEC definition)
  - 21. IEEE: Institute of Electrical and Electronics Engineers, Inc.
  - 22. ISO: International Standards Organization
  - 23. Lineup: with respect to switchgear, switchboards, and motor control centers, a contiguous group of vertical sections with common main busbars, and including bus tie breaker sections and control sections
  - 24. LV: low voltage, operating voltage under 600V (NEC definition)
  - 25. Megger: insulation tester with megohm scale
  - 26. NEC: NFPA 70, the National Electrical Code
  - 27. NETA: InterNational Electrical Testing Association, Inc.
  - 28. NICET: National Institute for Certification in Engineering Technologies
  - 29. NFPA: National Fire Protection Association
  - 30. NRTL: Nationally recognized testing laboratory as defined in 29 CFR 1910.7 as it applies to testing and inspecting for safety in the workplace (OSHA definition)
  - 31. Nonconformity: The nonfulfillment of a specified requirement (ASQ definition)
  - 32. "Or approved equal": proposed "equal" product shall be in conformance with all specified requirements, shall be equivalent in materials of construction to specified manufacturers' products, shall have equal or superior performance in the conditions anticipated for use of the product in this project, and shall be approved by the Engineer
  - 33. OSHA: Occupational Safety and Health Act
  - 34. Panel: with respect to circuit breaker and fuse power distribution centers, panel is equivalent to "distribution board", e.g., lighting panel; with respect to control panels, refers either to the entire control panel itself or to a steel plate used for mounting devices inside the control panel
  - 35. Provide: Throughout the Specification, use of this term includes project administration, quality assurance, human resources, tools & equipment, logistics and scheduling, submittals of shop drawings & samples for approval, managing suppliers, purchasing, manufacturing, factory testing, release for shipment, packing, delivery, storage, submittal of coordinated & dimensioned installation drawings for approval, installation, surface preparation & finishes, site testing, startup & commissioning, on-site supervision by equipment manufacturers' representatives, spare parts & tools, Operations and Maintenance (O&M) Manuals, training, guarantees and warranties, other work described in individual



- Sections of the Specification, and the Contractor's duties, responsibilities, risks, and liabilities under the Contract.
- 36. Punch list: document containing detailed descriptions of non-conformities
  - 37. Quality: conformance to specified requirements.
  - 38. RMS: root mean square
  - 39. Raceways: cable ladder and tray, conduit, duct, wireway, and associated boxes and fittings which enclose, support, and protect wires and cables
  - 40. Shop drawings: a complete package of manufacturer's equipment drawings, bill of materials, catalog data sheets, performance curves, calculations, and other data provided to demonstrate conformance to the equipment specification
  - 41. Substitution: an alternative, nonconforming product proposed by the Contractor in lieu of a specified, conforming product
  - 42. Substantial Completion: an electrical system may be considered substantially complete when the equipment has passed the specified tests required prior to energization, has been energized, has passed the Electrical Acceptance Tests, and all related Specification requirements have been met except for well-defined minor items which, in the opinion of the Engineer, may be repaired or replaced prior to Final Acceptance without adversely affecting process performance.
  - 43. Terminal box: an electrical enclosure containing labeled terminal blocks for connection of wiring
  - 44. UL: Underwriters Laboratories, Inc.
  - 45. VFC: variable frequency controller
  - 46. VFD: variable frequency drive, the combination of VFC and inverter-duty motor that drive mechanical loads using the principle of variable frequency motor control
  - 47. Wiring: conductors and connections to equipment terminals. 'Wiring' and 'cabling' shall be considered equivalent terms. Fiber optic cables shall be included in the scope of electrical wiring.

## 1.6 REFERENCE STANDARDS IN EFFECT

- A. Notwithstanding revision dates shown in this and other Sections of Division 16, the codes and standards applicable to this project shall be those in effect when bids are submitted.

## 1.7 QUALITY ASSURANCE

- A. In consultation with the equipment and materials Suppliers, the Contractor shall prepare and submit a Compliance Statement as described in "SUBMITTALS" with each submittal requiring approval.
- B. The Engineer's review of a submittal shall not relieve the Contractor of any Contractor responsibilities under the Contract. Review of a submittal that is incomplete, or one that has nonconformities that are not described in the Compliance Statement, followed by the discovery of unapproved nonconformities, will result in replacement of the non-conforming items at no additional cost to the Owner. Substitutions require the approval of the Engineer as described in the General Provisions.
- C. Manufacturers of electrical equipment shall have quality certification to ISO 9000:2000 or an equivalent Quality Management System acceptable to the Engineer.

- D. Equipment, materials, and installation shall conform to NEC requirements and shall be NRTL-listed and labeled.
- E. On-site electrical acceptance testing shall be performed as specified in Part 3 of other Sections of the Specification.
- F. Manufacturers, manufacturer's representatives, subcontractors, supervisors, installers, and testing agencies shall have qualifications and experience as described in other Sections of the Specification. Qualifications and experience submittals for firms and individuals shall be submitted, re-submitted, or updated whenever requested by the Owner's Representative.

#### 1.8 SAFETY IN THE WORKPLACE

- A. Electrical equipment and materials, and the Contractor's installation practices, shall conform to the following:
  - 1. Current edition of OSHA sections of the Code of Federal Regulations (CFR): Part 29 CFR 1910 for General Industry and Part 19 CFR 1926 for Construction Activities
  - 2. NFPA 70, the National Electrical Code
  - 3. Current edition of NFPA 70E, Standard for Electrical Safety Requirements for Employee Workplaces
- B. These regulations and standards impose obligations on equipment manufacturers to obtain NRTL certification, listing, and labeling to comply with OSHA (Occupational Safety and Health Act) and Department of Labor regulations.
- C. All electrical equipment for which NRTL test procedures have been established shall be certified, listed, and labeled, or otherwise determined to be safe for its intended use, by a NRTL. The absence of a specific reference to NRTL-listing in other Sections shall not relieve the Contractor of the requirement to provide NRTL-listed equipment, and to obtain certification as required by the AHJ in cases where NRTL listing and labeling is not a manufacturer's standard offering for a particular product.
- D. Equipment shall not be modified in any manner adversely affecting safety for the intended use, nor shall any equipment be modified on-site without the approval of the manufacturer.
- E. Equipment sound levels shall not exceed limits established by reference standards and local regulations. In the absence of reference standards and local regulatory requirements, sound pressure levels shall not exceed 85 dB (A) measured three feet from the equipment.
- F. Equipment with moving parts shall be fully guarded in compliance with OSHA rules and regulations.

1.9 INSPECTIONS BY THE AHJ

- A. The Contractor shall make arrangements for electrical inspection of the project by the AHJ. Upon completion of the work, final certificate of approval documents shall be submitted to the Engineer for forwarding to the Owner. This certificate shall be submitted prior to request for final payment. The Contractor shall pay all fees required for inspection.

1.10 WORKMANSHIP AND MATERIALS

- A. Materials and equipment shall be new and undamaged, shall be marked by the manufacturer, and shall be delivered to the construction site in the original factory packaging.
- B. Materials and equipment shall be installed in accordance with the Drawings, the Specification, the manufacturer's installation, operation, and maintenance instructions, and NECA installation standards that have been adopted by ANSI. In the event of apparent conflicts or discrepancies, the Engineer shall be informed of the apparent conflict or discrepancy in writing, and will instruct the Contractor how to proceed.

1.11 RESOURCES AND CONSTRUCTION SCHEDULE

- A. The Contractor shall provide sufficient resources, including qualified and experienced project managers, electrical engineers, superintendents, technicians, supervisors, electricians, tools and construction equipment to complete the electrical work in accordance with the activity durations and sequences shown on the Construction Schedule for this project.
- B. The construction schedule shall include the following activities and milestones, in realistic sequence, for each major item of electrical equipment in each building:
  - 1. Review of shop drawings
  - 2. Approval of shop drawings (milestone)
  - 3. Factory testing
  - 4. Shipping
  - 5. Delivery to site (milestone)
  - 6. Concrete formwork ready for sleeves, openings, and inserts
  - 7. Room ceiling, wall, and floor finishing complete (ready for equipment installation)
  - 8. Equipment installation (including "remote" sites)
  - 9. Tests on completion of installation (prior to energization)
  - 10. Energization (milestone)
  - 11. Acceptance testing
  - 12. Functional testing
  - 13. Installation, acceptance testing, and functional testing and commissioning complete (milestone)
- C. The construction schedule shall include the following activities and milestones, in the following sequence, for electrical raceways and wiring in each building and structure:

1. Preparation of coordination drawings
2. Materials delivery to site (milestone)
3. Foundations ready for grounding electrode installation
4. Imbedded raceway installation
5. Room ceiling, wall, and floor finishing complete (ready for exposed raceway installation)
6. Surface raceway installation
7. Wire & cable installation
8. Acceptance testing complete (milestone)

#### 1.12 CONTRACT DRAWINGS

- A. The Electrical Drawings show scaled layouts of "basis of design" equipment but do not include "approved for construction" dimensions for equipment, which shall be based on approved equipment shop drawings.

#### 1.13 COORDINATION OF ELECTRICAL WORK WITH OTHER TRADES

- A. Work under this Division shall be performed in conjunction with the work of other trades. Coordinate electrical installation work with the overall construction schedule. Examine the plans and specifications prior to commencement of work and become familiar with all phases of work involved prior to commencing installation work.
- B. The Contractor shall be responsible for coordinating dimensions of equipment and working clearances in accordance with the NEC, and in all cases shall bring to the attention of the Engineer any discrepancies on the plans and in the specifications prior to installation. Any work that installed without conformance to NEC requirements shall be removed and reinstalled at the Contractor's expense. The layout for sleeves, chases, openings, etc., must be arranged prior to construction in order to prevent unnecessary cutting. Examine Architectural drawings for doors swings, countertop heights, built-in furniture and casework, and other factors affecting electrical outlet locations prior to roughing-in raceways, boxes, fittings, and outlets.

#### 1.14 COORDINATION DRAWINGS

- A. Following approval of equipment shop drawings, the Contractor shall create dimensioned electrical equipment layout drawings for electrical and telecommunications rooms and areas, showing the relationships of approved electrical equipment with the building structural and architectural components, walls, floors, ceilings, doors, windows, louvers, access hatches, concrete equipment pads, anchors and bracing. One set of these Coordination Drawings shall be maintained at the construction site throughout the construction phase.

## 1.15 CODES AND STANDARDS

- A. All equipment and materials shall be manufactured, tested, and installed in accordance with the National Electrical Code (NEC) and local codes and standards, in accordance with the requirements of the AHJ.
- B. In addition, work shall be in accordance with the versions of the following referenced standards in effect at the time of bid opening:
  - 1. American Association for Laboratory Accreditation (A2LA) (establishes NRTL accreditation)
  - 2. American National Standards Institute (ANSI)
  - 3. American Society for Testing and Materials (ASTM)
  - 4. Americans with Disabilities Act (ADA)
  - 5. Code of Federal Regulations (29 CFR 1903, 1910, and 1926)
  - 6. Factory Mutual Engineering & Research (FME&R)
  - 7. Illuminating Engineering Society of North America (IESNA)
  - 8. Institute of Electrical and Electronic Engineers (IEEE)
  - 9. Insulated Cable Engineers Association (ICEA)
  - 10. International Building Code
  - 11. International Organization for Standardization (ISO)
  - 12. National Electrical Contractors Association (NECA)
  - 13. National Electrical Manufacturers Associates (NEMA)
  - 14. National Fire Protection Association (NFPA)
  - 15. Occupational Safety and Health Act (OSHA)
  - 16. Underwriters Laboratory, Inc. (UL) and other NRTL standards and test procedures

## 1.16 HAZARDOUS AREAS

- A. Electrical equipment for use in hazardous areas shall be NRTL listed and labeled for the application. Equipment and installation shall be in accordance with NEC requirements for the hazardous area classification indicated on the Drawings.

## 1.17 SUBMITTALS

- A. In addition to conforming to the requirements described in the General Provisions, submittals shall conform to the following requirements.
- B. One complete shop drawing submittal is required for all of the electrical equipment described in a single Division 16 Section of the Specification. Prerequisites for equipment shop drawing submittals, for example, Harmonics Analysis submittals associated with Variable Frequency Controllers and Coordination Studies associated with Switchgear, are described in each Section. Incomplete shop drawing submittals, and out-of-sequence shop drawing submittals, will be reviewed to the extent needed to determine incompleteness and out-of-sequence, and returned to the Contractor for re-submission.
- C. Compliance Statement: with each Shop Drawing submittal, include a Compliance Statement listing each Specification Section, and Part 1, 2, and 3 Sub-Sections, stating,

paragraph-by-paragraph, compliance with the Specification, each minor nonconformity that is within the intent of the Specification, and proposed nonconformities. Provide short description of minor nonconformities, and detailed explanation of other nonconformities.

D. Submittal Format

1. Each submittal shall be accompanied by a transmittal letter showing the submittal category and Specification Section reference number(s). Submittals shall be 3-hole punched and neatly bound in a 3-pin or 3-ring binder. Stapled bindings are not acceptable.
2. Submittals shall have a complete Table of Contents with tabs corresponding to the Table of Contents headings.
3. Submittal transmittal letters shall clearly identify the reason for submittal, e.g., for approval, as manufactured, or as-built / record.
4. Each page of each submittal shall be numbered. Page numbers shall be listed on the Table of Contents. Content shall be printed on 8-1/2 x 11 inch paper, or 11 x 17 paper (folded). Larger size drawings shall be folded and placed in labeled individual clear plastic pockets.
5. Product Data shall be clearly marked to show which items are proposed for this project. Information that does not apply to this project shall be crossed out.

E. Submittal Categories

1. Preconstruction Submittals, including proposed substitutions, supplier and manufacturer qualifications and experience, construction scheduling
2. Shop Drawings, including equipment drawings with a complete bill of materials and supporting manufacturer's catalog data. One separate and complete shop drawing submittal for all of the equipment specified in each Section is required.
3. Product Data, marked to indicate precisely which items are proposed for this project. One complete and separate Product Data submittal for all of the equipment and materials described in each Section requiring a product data submittal, is required. See Submittals requirements in other Sections in Division 16 to determine if Product Data is to be included in Shop Drawing submittals.
4. Samples, labeled by name, Specification Section and sub-clause, and mounted on sample boards
5. Design Data, including manufacturer's design calculations, where specified
6. Test Reports, including prototype tests, factory tests, field tests, acceptance tests, and functional tests. A test report is required for each specified test.
7. Certificates, including seismic qualification certification, welding certificates, factory training certificates for manufacturer's representatives
8. Manufacturer's Installation Instructions, including unloading, hoisting, rigging, short term storage, long term storage, method of field assembly, and other installation instructions
9. Manufacturer's Field Reports, including inspections and training records
10. Operation and Maintenance Manuals, including manufacturer's standard published literature and specially prepared descriptions of operation
11. Closeout Submittals, including black line paper copy of Record Drawings marked in red illustrating changes during construction
12. Spare Parts and Special Tools List

- F. In the absence of contradictory instructions in the General Provisions, Shop Drawings shall be marked with revision blocks to indicate status as follows:
1. FOR APPROVAL
  2. AS MANUFACTURED (incorporates Engineer's comments)
  3. AS BUILT / RECORD (incorporates on-site modifications)
- G. Coordination Drawings: Prepare dimensioned layout and coordination drawings of electrical equipment room(s), generator room(s), and electrical equipment area(s) for coordination with NEC accessibility requirements and the work of other trades sufficiently in advance to allow for review by other trades prior to starting related work, in accordance with the Construction Schedule.
- H. Record Drawings: Maintain a full size paper set of "black-line" working drawings throughout the project, and carefully record in red ink the locations and sizes of each major piece of electrical equipment, as well as manholes, handholes, and duct bank routing, to scale. Upon Substantial Completion of the work, deliver the marked-up set of prints to the Engineer. The Engineer reserves the right to withhold final payment until "As-Built" drawings are received.
- I. Operation and Maintenance Manuals: Provide copies of electrical Operation and Maintenance Manuals in conformance with the General Provisions. O&M Manuals shall be organized according to Division 16 Section numbers. Each copy shall be bound in a durable, 3-ring hardback binder, with data sheets individually punched and reinforced to prevent tearout. Data sheets shall be grouped, and binder dividers shall be provided to match the Table of Contents. Each Manual shall have an identifying label on the spine and front cover and shall include the following:
1. List of all O&M Manuals in the front of each manual.
  2. Table of Contents for each manual and each binder
  3. Copy of each of the following:
    - a. Preconstruction Submittals
    - b. Shop Drawings
    - c. Product Data
    - d. Design Data
    - e. Test Reports
    - f. Certificates
    - g. Manufacturer's Instructions
    - h. Manufacturer's Field Reports
    - i. Operation and Maintenance Data
    - j. Closeout Submittals
    - k. Spare Parts and Special Tool
- J. Spare Parts and Special Tools List: 90 days prior to the scheduled Substantial Completion date, submit a complete list of Spare Parts and Special Tools included in other Sections of Division 16 to the Owner, and request a time and location for delivery of the Spare Parts and Special Tools to the Owner.
- K. Spare Parts and Special Tools List: 90 days prior to the scheduled Substantial Completion date, submit a complete list of manufacturer's recommended Spare Parts and Special

Tools for equipment to the Owner, with prices firm for 90 days and estimated delivery dates.

1.18 SEISMIC PROTECTION FOR ELECTRICAL EQUIPMENT

- A. Provide seismic protection for all electrical equipment in conformance with Division 16 Section "Seismic Protection for Electrical Work", and in conformance with the electrical equipment performance requirements in individual Sections of Division 16.

1.19 OUTAGES

- A. Electrical outages: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service if required by the Specification.
  - 1. Submit written requests to the Owner for approval of proposed electrical outages a minimum of 30 days in advance of proposed interruption of electrical circuits, with step-by-step sequence and schedule for proposed outage. If required to maintain critical processes in operation during an outage, submit proposed method of providing temporary electrical circuits and power supplies.
  - 2. Confirm approved interruption of electrical service one week in advance of Owner-approved date.
  - 3. Do not proceed with interruption of electrical service without written approval from the Owner.

1.20 TEMPORARY LIGHTING AND POWER

- A. Refer to the General Provisions.
- B. The Contractor shall provide all temporary electric services for power and lighting including panels, feeders, lighting, outlets, branch circuits, etc.
- C. The Owner's electrical power shall not be used without permission of the Owner.
- D. All temporary work shall be in accordance with the NEC, OSHA, and NFPA safety requirements and shall be completely removed upon completion of the project.

1.21 OFF-SITE CONSTRUCTION WORK

- A. Installation work at remote locations, e.g., remote control and telemetry outstations that are not part of the construction site handed over to the Contractor, shall be in accordance with the same requirements for installation work on-site. Requests for access to off-site locations shall be submitted to the Owner 90 days in advance of scheduled work.



## PART 2 - PRODUCTS

### 2.1 EQUIPMENT AND MATERIALS

- A. Provide equipment and materials in compliance with other Sections of Division 16. The requirements in this Section apply to all Sections in Division 16.

### 2.2 ELECTRICAL IDENTIFICATION

- A. Electrical equipment, raceways, boxes, fittings, wires and cables shall be marked in the field in accordance with Division 16 Section "Electrical Identification".

### 2.3 ELECTRICAL ENCLOSURES

- A. In the absence of other specified NEMA enclosure ratings in other Sections of the Specification, and where cross-referenced in other Sections of Division 16, electrical enclosures shall have degree of protection ratings suitable for the intended application (e.g., watertight, dust-tight, explosion-proof) and environmental conditions.
- B. Electrical equipment enclosures shall have the following NEMA 250 ratings for the following specified non-hazardous locations unless otherwise indicated:
  - 1. NEMA 1 or 1A painted steel:
    - a. Electrical Rooms
    - b. Clean, dry, indoor rooms in administrative office building areas
  - 2. NEMA 3R painted steel: Electrical enclosures located outdoors.
  - 3. NEMA 4X stainless steel:
    - a. Outdoors
    - b. Kitchens and food preparation areas
    - c. Indoor process equipment and pump rooms
    - d. Indoor chemical rooms
    - e. Laboratory rooms
    - f. Basements and below-grade rooms
  - 4. NEMA 12: Clean, dry non-process areas, attics, and HVAC equipment rooms
- C. Enclosures located in hazardous areas shall be epoxy powder-coated cast aluminum NEMA 7 and/or 9 with listing required for the hazardous area classification unless otherwise indicated.
- D. Where different enclosure ratings and enclosure materials are specified in other Sections of the Specification, the Contractor shall submit a written request for clarification of the intent of the Specification to the Engineer.

### 2.4 ELECTROMAGNETIC INTERFERENCE

- A. Power conversion equipment, including variable frequency controllers, battery-powered inverters, computer power supplies, frequency converters, and Uninterruptible Power Supplies, shall be fitted with EMI (electromagnetic interference), RFI (radio frequency

interference) and telephone interference filters to limit interference effects on other equipment in the area in accordance with IEEE standards and recommendations applicable to the equipment.

## 2.5 DISSIMILAR METALS

- A. Dissimilar metals shall not be connected, spliced, or joined except where specifically approved in writing by the Engineer. Copper busbars, aluminum busbars, and copper-to-aluminum busbar connections shall be tin-plated at joints and at cable lugs. Bolted electrical conductor connections shall be made with grade 3 or better plated steel bolts, nuts, and washers. Belleville washers & tin-plated flat washers shall be used at aluminum-to-copper and aluminum-to-aluminum busbar joints.

## 2.6 WARRANTIES

- A. Warranties for equipment and materials shall conform to the General Provisions.
- B. Provide an on-site parts and labor warranty for a minimum period of one year after Substantial Completion for all equipment and materials. In cases where the manufacturer offers a longer warranty period, the longer warranty period shall apply as described by the manufacturer.
- C. All components of electrical systems that are not fully functional at the time of Substantial Completion shall have warranties extended to provide minimum one year coverage of fully operational equipment unless otherwise approved by the Owner's Representative.

## PART 3 - EXECUTION

### 3.1 DELIVERY AND HANDLING

- A. Equipment delivered to site shall be handled in accordance with manufacturer's recommendations by experienced riggers, crane operators, and fork lift truck operators.

### 3.2 STORAGE AND PROTECTION OF EQUIPMENT

- A. All electrical equipment to be used in construction shall be properly stored and protected against the elements. General construction materials shall be stored in covered trailers. Switchgear, unit substations, motor controllers, panelboards, emergency lighting, solid state equipment, engine generator shall be stored in a clean, dry, indoor location, under cover, until the building is weathertight and the area where the equipment is to be installed has been completed to the satisfaction of the Engineer, including completion of overhead work by other trades.
- B. Long term storage instructions of the manufacturer shall be followed.

- C. Equipment with anti-condensation heaters shall have the 120VAC anti-condensation heaters energized from temporary 120VAC supplies as soon the factory packaging has been opened.
- D. Equipment enclosures exposed to construction damage such as paint spots, spackling, waterproofing, insulation etc. shall be covered and protected against damage.

### 3.3 INSPECTIONS PRIOR TO COVERING-UP

- A. Raceways embedded in concrete or otherwise concealed shall be inspected in the presence of the Engineer's Representative prior to placement of concrete. Sufficient time shall be allowed to make corrections if required.

### 3.4 ON-SITE INSPECTIONS AND NONCONFORMITIES

- A. Equipment shall be inspected on delivery to site for physical damage and for compliance with the Specification and approved equipment shop drawings.
- B. Installed equipment, raceways, and wiring shall be inspected on completion of installation for compliance with the Specification and approved installation drawings.
- C. A Punch List will be prepared by the Owner's Representative during inspections and testing, and issued to the Contractor for corrective action.
- D. Repairs, replacement, and other corrective action that requires de-energizing any part of the Electrical Power Distribution and Control System shall be completed prior to the scheduled date for Substantial Completion of the project.

### 3.5 PENETRATIONS AND SEALING

- A. Sleeves and rectangular openings shall be provided for raceways provided under this Contract, and for raceways for future equipment where future equipment is shown on the Drawings. Sleeves and rectangular openings for the passage of raceways and conductors shall be sealed after the raceways and conductors have been installed. Spare sleeves and rectangular openings shall also be sealed.
- B. Penetration of Waterproof Construction: Coordinate the work to minimize penetration of waterproof construction, including roofs and exterior walls. Where penetrations are necessary, provide sleeves and sealing fittings to make each penetration watertight. Conduit sleeves and openings shall be sealed watertight with mechanical seals. Water tightness shall not rely on caulking.
- C. Penetration of Fire-Rated Construction: Sleeves and openings in fire-resistant walls and floors for electrical raceways, wires, and cables shall be sealed after installation of the raceways, wires, and cables with NRTL-certified fire penetration seals, sealant, and fire-rated foam filler products to the same degree of fire resistance (e.g., 1, 2, or 4 hours) as the adjacent walls and floors, and to the satisfaction of the AHJ. Where both fire sealing

and water sealing is required, mechanical seals with NRTL-listed fire-resistant properties shall be used. Fire sealants shall be compatible with the cable jacket and wire insulation materials. Manufacturer's certification of compatibility shall be provided at the request of the Engineer. For additional requirements, refer to Division 16 Section "Raceways, Boxes, and Fittings".

### 3.6 ALTERATIONS AND REMOVAL OF EXISTING WORK

- A. Conform to the General Provisions.
- B. Where the work specified under this Division connects to the existing electrical systems, the Contractor shall perform all necessary alterations to the existing work as required.
- C. All work performed on the existing electrical systems shall be in accordance with the applicable provisions of the Specification. Visit the project site prior to submitting bids and examine the conditions in which work will be performed. Carefully document all existing conditions pertaining to removal and demolition work.
- D. Contractor shall make connections to existing equipment where indicated on the Drawings.
- E. All existing electrical materials not reused under this Division, and not indicated for handover to the Owner, shall become the property of the Contractor and shall be expeditiously removed from the project site.
- F. While performing connections and alterations to existing electrical work, the Contractor shall take special care to protect all existing equipment from dirt, debris and damage. Damaged equipment shall be replaced at no additional cost to the Owner.
- G. All removal work shall be performed in a neat and workmanlike manner and shall be executed with the least possible disturbance to the building and tenants. The scheduling of all removal work shall be coordinated with other trades and with the Owner's schedule and operation of the building.
- H. Where removal work is performed, the Contractor shall repair all building surfaces damaged by such work. Cut back embedded conduits to 2 inches minimum below finished face of walls, floor, and ceilings, and fill in holes with appropriate patching material. Repair, re-tile, replace (in the case of ceiling panels) or re-paint to match existing adjacent surfaces.

### 3.7 ELECTRICAL SAFETY AND TEST EQUIPMENT

- A. Maintain the following test instruments and calibration certificates less than 12 months old on-site as a minimum:
  - 1. True RMS digital volt-ohm meter with resistance scale
  - 2. Clip-on ammeter with appropriate Amps range.
  - 3. 500V DC battery-powered megger insulation tester

- B. Provide electrical safety equipment, including personal protective equipment, LV gloves, electrical blankets, test instruments, lighting, ventilation, and instructions in the use of safety equipment, and perform the work under this Contract in accordance with applicable safety rules and regulations. The Contractor's attention is directed to safety issues related to confined spaces as defined in OSHA regulations.
- C. One numbered safety lockout padlock with an 'unlawful-to-duplicate' unique key shall be provided for each motor controller. Safety lockouts shall be used during testing and commissioning, and shall subsequently be handed over to the Owner in a lockable sheet metal key cabinet. The safety lockout padlock supplier shall be a specialist supplier with a registered key program.

### 3.8 CLEANING AND PAINTING

- A. Conform to the General and Special Provisions.
- B. After installation and wiring work is completed, all dust and debris shall be removed from the interior and exterior of each electrical equipment enclosure and motor by vacuum-cleaning with circuits de-energized. Do not use compressed air for cleaning. Vacuum cleaner wands and brushes shall be non-conducting. Anti-static protection shall be provided for static-sensitive devices.
- C. Clean and remove all rust, scale, oil, grease, and dirt from panelboard enclosures, conduits, pull, junction and terminal boxes, fittings and hangers, leaving surfaces in condition for final surface preparation and painting.
- D. All ferrous materials that are concealed, or exposed in unfinished areas, including fittings, hangers, junction, pull and terminal boxes, that are not plated or painted with a factory-applied finish, shall be painted under this Section with one coat of zinc-chromate primer and one finish coat of paint approved by the Engineer. Nonferrous materials shall be cleaned only and left unpainted.
- E. Equipment furnished with a factory finish coat shall have finish carefully touched-up where it is scratched or otherwise damaged. Touch-up work shall be match the color and type of the original finish.

### 3.9 INSPECTION AND TESTING ON-SITE

- A. The Contractor shall hire a NETA-certified or NICET-certified specialist electrical testing firm to perform on-site inspection and electrical testing.
- B. Perform Electrical Acceptance Tests in accordance with NETA Acceptance Testing Specifications ATS-2007 listed in Part 3 of each Section of Division 16.
- C. Submit manufacturer-endorsed field test data sheets & procedures for approval, test equipment and materials on-site prior to site visit by manufacturer's factory-trained representative, test equipment on-site under the supervision of the Owner's Representative and the equipment manufacturer's factory-trained representative(s), and

submit manufacturer's statement of acceptance of installation prior to energization of equipment. Invite the Engineer and Owner's Representatives to witness field testing.

- D. Electrical equipment shall not be energized without the approval of the Engineer.
- E. A complete certified electrical test report shall be compiled by the electrical testing firm, checked for completeness, and submitted for the record.
- F. The Contractor shall notify all parties whose presence is necessary for the test; and in all cases, the Engineer shall be notified at least one week prior to the actual test.

### 3.10 ELECTRICAL POWER DISTRIBUTION SYSTEM FUNCTIONAL TESTS

- A. Conform to the General Provisions.
- B. After testing and commissioning for equipment has been completed, the following functional tests of the electrical power distribution and control system shall be carried out by the Contractor's specialist electrical testing firm in the presence of the Engineer or Owner's representative:
  - 1. Using a precision laboratory voltmeter with certified 0.1 % accuracy, record incoming supply voltages for each FACU in the presence of the Engineer's Representative. Readings which indicate more than 1% voltage drop will require corrective action.
  - 2. See Startup test required for fire alarm system in Spec 16750.
- C. Additional testing shall be carried out where recommended by equipment suppliers or requested by the Engineer.

### 3.11 DEMONSTRATION AND TRAINING

- A. Conform to the General Provisions.
- B. Upon completion of all work furnished and installed under Division 16, instruct and train the Owner's representatives in the operation and maintenance of all the various apparatus and equipment to the complete satisfaction of the Engineer. Training shall be as specified in each Section of Division 16, and shall start when the completed systems have been put in operational condition and tested as specified. A complete Training Course syllabus together with copies of the training materials shall be submitted with the Contractor's proposed schedule for instruction and training.
- C. Provide classroom and on-site training of the Owner's staff by an authorized representative of the equipment manufacturer during commissioning of the following electrical equipment:
  - 1. Control panels and control consoles: <1 > day each
  - 2. Fire Alarm System: <2 > days

- D. Submit qualifications and experience of manufacturer's proposed training personnel for approval.
- E. Additional requirements for training are described in other Sections of the Specification.

END OF SECTION

## SECTION 16071

### SEISMIC PROTECTION FOR ELECTRICAL WORK

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Design and provide seismic supports and anchors for electrical equipment, and seismic bracing for raceway systems, in conformance with the requirements in this Section and Division 16 Section "Electrical - General".
- B. This Section includes seismic design criteria to serve as the basis of design for seismic restraint calculations for the Contractor's equipment and raceway installation.
- C. Seismic restraint calculations shall be performed by a registered professional Structural Engineer retained by the Contractor. Seismic restraints shall be provided in conformance with Building Code requirements.

##### 1.2 RELATED DOCUMENTS

- A. Seismic protection requirements for factory-manufactured electrical equipment components inside electrical enclosures are described in individual Division 16 equipment Sections.

##### 1.3 DEFINITIONS

- A. CCR: California Code of Regulations
- B. FEMA: Federal Emergency Management Agency
- C. IBC: International Building Code
- D. ICSSC: Interagency Committee on Seismic Safety in Construction
- E. NEHRP: National Earthquake Hazards Reduction Program
- F. OSHPD: California Office of Statewide Health Planning and Development
- G. UL: Underwriter's Laboratories, Inc.
- H. Seismic Restraint: A fixed device (a seismic brace, an anchor bolt or stud, or a fastening assembly) used to prevent vertical or horizontal movement, or both vertical and horizontal movement, of an electrical system component during an earthquake.



- I. Mobile Structural Element: A part of the building structure such as a slab, floor structure, roof structure, or wall that may move independent of other mobile structural elements during an earthquake.

#### 1.4 QUALIFICATIONS

- A. Manufacturer's Factory Qualifications: Manufacturing facilities shall have accreditation to ISO 9000:2000 or an equivalent quality management system acceptable to the Engineer. The manufacturing company shall be listed in a published NRTL directory of companies offering NRTL-listed and labeled products.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing seismic engineering services, including the design of seismic restraints, that are similar to those indicated for this Project.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, with the experience and capability to conduct the testing indicated.

#### 1.5 REFERENCE STANDARDS

- A. Comply with the following codes and standards:
  - 1. International Building Code (2009)

#### 1.6 ENVIRONMENTAL CONDITIONS

- A. Environmental conditions:
  - 1. Equipment specified in this Section shall be suitable for the temperature range, humidity range, and altitude specified in Division 16 Section "Electrical – General".

#### 1.7 SUBMITTALS

- A. Product Data: Submit technical data sheets indicating types, styles, materials, strength, fastening provisions, and finish for each type and size of seismic restraint component used.
  - 1. Anchor Bolts and Studs: Types and sizes, complete with test report numbers and rated strength in tension and shear.
  - 2. Steel Channel Type Bracing Assemblies and Hanger Rod Stiffeners: Component types and sizes, complete with test report numbers and rated strength in tension, compression, bending, and shear.
  - 3. Steel Cable Type Bracing Assemblies: Component types and sizes, complete with test report numbers and rated strength in tension.
- B. Shop Drawings: Furnish anchorage and bracing details in isometric diagram format with complete bill of materials listing manufacturer and catalog number for each component. .  
Furnish calculations signed and sealed by a registered professional Structural Engineer.

1. Design Analysis: To support selection and arrangement of seismic restraints. Include graphical analysis in the form of vector diagrams with calculations of combined tensile and shear loads. Indicate direction and value of forces transmitted to structural components during specified seismic events.
  2. Details: Detail fabrication and arrangement. Detail attachment of restraints to both structural and restrained items. Show attachment locations, methods, and spacing, identifying components and listing their strengths
  3. Pre-approval and Evaluation Documentation: By a NRTL or agency acceptable to the AHJ, showing maximum ratings of restraints and the basis for approval (tests or calculations).
  4. Include a list of items not requiring seismic bracing under the specified Codes and Standards.
  5. Consider including paragraph below if seismic bracing of conduit banks, cable trays, and other similar components will be installed in congested areas and if construction budget includes cost of Coordination Drawings. Coordinate with Drawings and with corresponding paragraphs in other Sections and Divisions.
- C. Coordination Drawings: Include seismic bracing for electrical components with other systems and equipment, including other seismic restraints in the vicinity, on the Coordination Drawings described in Division 16 Section "Electrical - General".
- D. Product Certificates: Signed by manufacturers of seismic restraints certifying that products furnished comply with specified requirements.
- E. Qualification Data: For firms and persons as described in "Qualifications" and "Quality Assurance" portions of this Section.
- F. Material Test Reports: From a qualified testing agency indicating and interpreting test results of seismic control devices for compliance with specified requirements.
- 1.8 PROJECT CONDITIONS (IBC)
- A. Building Code: IBC 2009.
  - B. Seismic Design Category as Defined in IBC: D.
  - C. Occupancy Category: III.
  - D. Response Modification Coefficient R: 3.25
- 1.9 COORDINATION
- A. Coordinate layout and installation of seismic bracing with building structural system and architectural features, and with mechanical, fire-protection, electrical, and other installations in the vicinity. Show seismic bracing on layout and coordination drawings.
  - B. Coordinate seismic design for anchor bolts with building structural design.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with specified requirements, provide products by one of the following manufacturers:
1. Amber/Booth Company, Inc.
  2. B-Line Systems, Inc.
  3. Erico, Inc.
  4. GS Metals Corp.
  5. Loos & Company, Inc.
  6. Mason Industries, Inc,
  7. Powerstrut.
  8. Thomas & Betts Corp.
  9. Unistrut Corporation.

### 2.2 MATERIALS OF CONSTRUCTION

- A. Restraints shall be manufactured of the following materials:
1. Indoor Dry Locations: Zinc plated steel. Hot dip galvanized or stainless steel materials are required for direct contact with concrete.
  2. Indoor Damp Locations: Hot dip galvanized or stainless steel.
  3. Corrosive Locations: Stainless steel of suitable corrosion-resistant grade, or hot dip galvanized steel with corrosion-resistant coating, approved by the Engineer for the corrosive environment.
  4. In the event of an apparent conflict with Code-specified materials, notify the Engineer.

### 2.3 ANCHORAGE AND STRUCTURAL ATTACHMENT COMPONENTS

- A. Strength: Defined in reports by a NRTL or agency acceptable to the AHJ.
1. Structural Safety Factor: Strength in tension and shear of components used shall be at least two times the maximum seismic forces to which they will be subjected.
- B. Concrete and Masonry Anchor Bolts and Studs: Steel-expansion wedge type or epoxy stud type, recommended in the manufacturer's published technical literature as suitable for seismic loading.
- C. Concrete Inserts: Steel channel type.
- D. Through-Bolts: Structural type, hex head, high strength. Comply with ASTM A 325.
- E. Welding Lugs: Comply with MSS SP-69, Type 57. Welding shall be designed and inspected by a registered professional Structural Engineer.
- F. Beam Clamps for Steel Beams and Joists: Double sided. Single-sided type is not acceptable.

- G. Bushings for Floor-Mounted Equipment Anchors: Neoprene units designed for seismically rated rigid equipment mountings, and matched to the type and size of anchor bolts and studs used.
- H. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for seismically rated rigid equipment mountings, and matched to the type and size of attachment devices used.

## 2.4 SEISMIC BRACING COMPONENTS

- A. Steel Channel Type Bracing Assemblies: cold rolled steel channel, nominal 1-1/2 inch width.
  - 1. Materials for Channel, Fittings, and Accessories: match conduit support channel materials described in Division 16 Section "Raceways, Boxes, and Fittings".
- B. Steel Cable-Type Bracing Assemblies: High-strength steel wire rope cable attached to steel thimbles, brackets, and bolts designed for cable service.
  - 1. Arrange units for attachment to the braced component at one end and to the structure at the other end.
  - 2. Wire Rope Cable: Comply ASTM wire rope standards applicable to the materials of construction. Use 49- or 133-strand cable with a minimum strength of 2 times the calculated maximum seismic force to be resisted.
- C. Hanger Rod Stiffeners: Slotted steel channels with internally bolted connections to hanger rod.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install seismic restraints according to applicable codes and regulations and as approved by authorities having jurisdiction, unless more stringent requirements are indicated.

### 3.2 STRUCTURAL ATTACHMENTS

- A. Use bolted connections with steel brackets, slotted channel, and slotted-channel fittings to spread structural loads and reduce stresses.
- B. Attachments to New Concrete: Bolt to channel-type concrete inserts or use expansion anchors or epoxy studs.
- C. Attachments to Existing Concrete: Use expansion anchors or epoxy studs.
- D. Holes for Expansion Anchors and Epoxy Studs in Concrete: Drill at locations and to depths that avoid reinforcing bars.
- E. Attachments to Solid Concrete Masonry Unit Walls: Use expansion anchors.

- F. Attachments to Hollow Walls: Bolt to slotted steel channels fastened to wall with hollow wall anchors.
- G. Attachments to Wood Structural Members: Install bolts through members.
- H. Attachments to Steel: Bolt to clamps on flanges of beams or on upper truss chords of bar joists.

### 3.3 SEISMIC BRACING INSTALLATION

- A. Install bracing according to approved analysis and design criteria.
- B. Expansion and Contraction: Install to allow for thermal movement of braced components.
- C. Cable Braces: Install with amount of slack recommended by manufacturer.
- D. Attachment to Structure: Anchor bracing to the structure at flanges of beams, upper truss chords of bar joists, or at concrete members.

### 3.4 ACCOMMODATION OF DIFFERENTIAL SEISMIC MOTION

- A. Make flexible connections in raceways, cables, wireways, cable trays, and busways where they cross expansion and seismic control joints, where adjacent sections or branches are supported by different structural elements, and where they terminate at electrical equipment anchored to a different structural element from the one supporting them.

### 3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform the following field quality-control testing:
- B. Testing Agency: Engage a qualified testing agency to perform the following field quality-control testing:
- C. Testing: Test pull-out resistance of seismic anchorage devices.
  - 1. Provide necessary test equipment required for reliable testing.
  - 2. Provide evidence of recent calibration of test equipment by a testing agency acceptable to authorities having jurisdiction.
  - 3. Schedule test with Owner, through Engineer, before connecting anchorage device to restrained component (unless post-connection testing has been approved), and with at least seven days' advance notice.
  - 4. Obtain Engineer's approval before transmitting test loads to the structure. Provide temporary load-spreading members.
  - 5. Test at least four of each type and size of installed anchors and fasteners selected by the Engineer.

6. Test to 90 percent of rated proof load of device.
7. If a device fails the test, modify all installations of same type and retest until satisfactory results are achieved.
8. Record test results.

END OF SECTION

SECTION 16095

ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide electrical equipment nameplates, junction, pull and outlet box labels, raceway identification, wire markers, circuit identification, and warning signs for electrical equipment included in this Contract, as specified herein.
- B. This Section includes product and installation requirements for identification of electrical equipment, raceways, conductors, circuits, and outlets, and warning signs.

1.2 CODES AND STANDARDS

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
  - 1. National Electrical Safety Code (NESC)
  - 2. Nationally Recognized Testing Laboratory (NRTL)
  - 3. NFPA 70E Standard for Electrical Safety in the Workplace®
  - 4. NFPA 79 Electrical Standard for Industrial Machinery

1.3 QUALITY ASSURANCE

- A. Manufacturers: Manufacturers shall have accreditation to ISO 9000:2000 or an equivalent quality management system acceptable to the Engineer, and shall offer NRTL-listed and labeled products.
- B. Comply with NFPA and OSHA standards.

1.4 SUBMITTALS

- A. Make submittals in accordance with the General Provisions.
- B. Submittals shall include the following:
  - 1. Product data
  - 2. Complete list of all engraved nameplates.
  - 3. Sample of each of the following:
    - a. engraved equipment nameplate
    - b. computer-generated label
    - c. wiremarkers
    - d. safety signs
    - e. laminated instrument tags

## PART 2 - PRODUCTS

### 2.1 EQUIPMENT NAMEPLATES

- A. Provide custom nameplates for all equipment listed in Part 3 of this Section.
- B. Nameplates shall have white letters engraved on black field, and shall be fabricated from 3-layer (black-white-black) thermoset plastic.
- C. Drill holes in nameplates to be fastened with tie-wraps as described in Part 3 of this Section.
- D. Nameplate lettering to be uppercase Roman block letters, minimum height as follows:
  - 1. Control Panels (unless factory-labeled): 1/2 inch.
  - 2. Other equipment: 1/4-inch minimum.

### 2.2 WIREMARKERS

- A. Wire markers shall be computer-printed on white wrap-around paper with clear plastic protective "tail" and pressure-sensitive adhesive.
- B. Manufacturer: Brady, T&B, Panduit, or approved equal.

### 2.3 WIRE COLOR CODING

- A. Comply with NEC requirements for applying color-coding.
- B. Color coding for 120 VAC control wiring shall be as follows:
  - 1. Line - Black
  - 2. Neutral - White
  - 3. Ground - Green
- C. Color coding for twisted shielded pair and twisted shielded triple signal cable conductors shall be the manufacturer's standard insulation colors.
- D. Color coding for DC power and control circuit wires:
  - 1. Negative polarity - Black
  - 2. Positive polarity - Red
  - 3. Switched - any color except black, red, white, and green.

### 2.4 CONDUIT IDENTIFICATION

- A. Identify exposed unpainted conduits with a black indelible felt-tip marker.
- B. Identify exposed painted conduits with laminated tags fastened with nylon ties.



### PART 3 - INSTALLATION

#### 3.1 NAMEPLATES

- A. Fabricate equipment nameplates using the description and tag number nomenclature shown on the Drawings.
- B. Provide equipment nameplates for major fire alarm system components.
- C. Fasten nameplates to clean flat metal surfaces with pressure-sensitive two-sided adhesive tape and stainless steel screws.

#### 3.2 WIRE COLOR CODING AND MARKING

- A. Color code each phase, neutral, and ground wire for branch circuits, at points of origin and termination of wires.
- B. Provide wiremarkers on all control and signal wires.

#### 3.3 CONDUIT IDENTIFICATION

- A. Clean unpainted conduit surfaces with mineral spirits. Write conduit number shown on the Conduit & Wire Schedules on each conduit at each exposed conduit termination point.
- B. Attached conduit identification labels to painted conduits with nylon tie-wraps.

END OF SECTION

## SECTION 16110

### RACEWAYS, BOXES, AND FITTINGS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Provide a complete system of raceways, including conduit, fittings, terminal boxes, hangers, supports, and accessories, as shown on the Drawings and specified herein.

##### 1.2 RELATED DOCUMENTS

- A. Related requirements are also included in the following Sections:
  - 1. Division 16750 Fire Alarm Systems.

##### 1.3 DEFINITIONS

- A. In addition to the definitions in Division 16 Section "Electrical - General", the following definitions apply to this Section:
  - 1. Clamp-back: spacer used with conduit one-hole strap to provide air gap between surface and conduit
  - 2. EMT: Electrical metallic tubing (NEC definition)
  - 3. ENT: Electrical nonmetallic tubing
  - 4. EPDM: Ethylene-propylenediene terpolymer rubber
  - 5. Equipment bonding jumper: suitable for connecting sections of conduit used for equipment grounding conductor (see NEC definition)
  - 6. FMC: Flexible metal conduit (NEC definition)
  - 7. FRP: fiberglass reinforced plastic
  - 8. ID: inside diameter
  - 9. IMC: Intermediate metal conduit (NEC definition)
  - 10. LFMC: Liquidtight flexible metal conduit (NEC definition)
  - 11. LFNC: Liquidtight flexible nonmetallic conduit
  - 12. NBR: Acrylonitrile-butadiene rubber
  - 13. NPT: National pipe thread
  - 14. OD: outside diameter
  - 15. PVC: Polyvinyl chloride
  - 16. RAC: Rigid aluminum conduit
  - 17. RGS: Rigid galvanized steel conduit
  - 18. RMC: Rigid metal conduit (NEC definition)
  - 19. RNC: Rigid nonmetallic conduit (NEC definition) includes PVC and RTRC
  - 20. RTRC: Reinforced thermosetting resin conduit (fiberglass conduit - NEC definition)

##### 1.4 REFERENCE STANDARDS

- A. Comply with the following standards:

1. NEMA Standards applicable to raceways, boxes, and fittings.
2. UL Standards applicable to raceways, boxes, and fittings. Each raceway, box, and fitting shall be NRTL-listed and labeled.
3. ANSI and ASTM standards mentioned in this Section and included in the UL and NEMA Standards applicable to raceways, boxes, and fittings.

#### 1.5 ENVIRONMENTAL CONDITIONS

- A. Provide raceways, boxes, and fittings fabricated from materials resistant to corrosion and suitable for the application in the locations where installed, in conformance with NEC requirements for installation in "damp", "wet", and hazardous (classified) areas.

#### 1.6 SUBMITTALS

- A. **Product Data:** For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. **Shop Drawings:** For the following raceway components. Include plans, elevations, sections, details, and attachments to other work.
1. Custom enclosures and cabinets.
  2. For handholes and boxes for underground wiring, including the following:
    - a. Duct entry provisions, including locations and duct sizes.
    - b. Frame and cover design.
    - c. Grounding details.
    - d. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.
    - e. Joint details.
- C. **Coordination Drawings:** Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
1. Structural members in the paths of conduit groups with common supports.
  2. HVAC and plumbing items and architectural features in the paths of conduit groups with common supports.
  3. Coordinate layout and installation of raceways, boxes, fittings, hangers, enclosures, cabinets, and supports with other construction, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.
- D. **Manufacturer Seismic Qualification Certification:** Submit certification that enclosures and cabinets and their mounting provisions, including those for internal components, will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems." Include the following:
1. **Basis for Certification:** Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    - a. The term "withstand" means "the cabinet or enclosure will remain in place without separation of any parts when subjected to the seismic forces specified [and the unit will retain its enclosure characteristics, including its interior accessibility, after the seismic event]."

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- E. Qualification Data: For professional engineer and testing agency.
- F. Source quality-control test reports.

#### 1.7 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70 and NEMA standards.
- C. PVC-coated conduit, boxes, and fittings that are connected together shall be from the same manufacturer.

### PART 2 - PRODUCTS

#### 2.1 CONDUIT, BOX, AND FITTING MANUFACTURERS

- A. Provide products by the following manufacturers:
1. Adalet / A Scott Fetzer Company
  2. AFC Cable Systems, Inc.
  3. Alflec Inc.
  4. Allied Tube & Conduit Corporation
  5. Allied Tube and Conduit Div. / A TYCO International Ltd. Company
  6. Anamet Electrical, Inc.; Anaconda Metal Hose.
  7. Appleton
  8. Bell
  9. Carlon
  10. Cooper / B-Line
  11. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
  12. Electri-Flex Co.
  13. Emerson/General Signal; Appleton Electric Company.
  14. Erickson Electrical Equipment Co.
  15. Hoffman.
  16. Hubbell, Inc. / RACO
  17. Hubbell, Inc./ Killark Electric Manufacturing Co.
  18. Lew Electric Fittings Co.
  19. LTV Steel Tubular Products Company
  20. Myers
  21. O-Z Gedney
  22. Perma-Cote
  23. Pittsburgh Standard Conduit Co.,

24. RACO; Division of Hubbell, Inc.
25. Robroy Industries
26. Robroy Industries, Inc.; Enclosure Division.
27. Scott Fetzer Co.; Adalet-PLM Division.
28. Spring City Electrical Manufacturing Co.
29. Thomas & Betts Corporation.
30. Triangle PWC Co.
31. Wheatland Tube Co.
32. Or approved equal.

## 2.2 ELECTRICAL METALLIC TUBING (EMT)

- A. Electrical Metallic Tubing (EMT): hot-dip galvanized steel tubing to ANSI C80.3 with fittings be for use in accordance with NEC Article 358 "Electrical Metallic Tubing: Type EMT", NRTL-listed and labeled under UL 797.
- B. Provide locknuts, bushings, fittings, conduit bodies, junction boxes, pull boxes, and outlet boxes as follows:
  1. NEMA enclosure type in accordance with Part 3 of this Section
  2. Locknuts: galvanized steel
  3. Bushings: thermoplastic
  4. Fittings;
    - a. Indoor and two (2") inches in size and smaller, shall be steel compression type fittings.
    - b. 2-1/2 inch size and larger must employ steel compression gland fittings.
    - c. Outdoor and indoor shall be rain-tight steel compression gland fittings.
    - d. Indent type fittings shall not be used.
    - e. Where installed in slab or concrete work, provide approved concrete tight fittings.
  5. Conduit bodies: cast metal.
  6. Junction and outlet boxes: stamped steel in dry indoor areas, cast metal in wet and outdoor areas
  7. Pull boxes: painted sheet metal

## 2.3 INTERMEDIATE METAL CONDUIT

- A. Intermediate Metal Conduit: zinc-plated steel conduit with threaded ends to ANSI C80.6 for use in accordance with NEC Article "Intermediate Metal Conduit: Type IMC", NRTL-listed and labeled under UL 1242.
- B. Boxes and fittings shall be as specified for Rigid Galvanized Steel (RGS) Conduit below.

## 2.4 RIGID METAL CONDUIT (RMC)

- A. Rigid Galvanized Steel Conduit (RGS): hot dip galvanized exterior and interior to ANSI C80.1, threads hot dip galvanized after fabrication, for use in accordance with NEC Article "Rigid Metal Conduit: Type RMC", NRTL-listed and labeled under UL 6. Threads shall be hot dip galvanized after fabrication.

- B. Provide RMC locknuts, bushings, fittings, conduit bodies, junction boxes, pull boxes, and outlet boxes as follows:
1. NEMA ratings: in accordance with Part 3 of this Section.
  2. Locknuts: galvanized steel. Locknuts on outside of NEMA 12 sheet metal enclosures shall be sealing O-ring type.
  3. Bushings: galvanized steel or malleable iron, insulated-throat grounding type, with thermoset plastic insulation insert, complete with mechanical ground lug for connection to ground wire.
  4. Fittings: ANSI 80.4, hot-dip galvanized cast steel or malleable iron. Conduit hubs or similar approved fittings shall be provided for conduit entry to water and dust-resistant enclosures. Use aluminum fittings with aluminum conduit.
  5. Conduit bodies: galvanized cast steel or malleable iron Form 8 with oil-resistant gasket and galvanized cast steel or malleable iron cover. Use cast aluminum conduit bodies with aluminum conduit.
  6. Junction boxes: galvanized cast steel or malleable iron with oil-resistant gasket and galvanized cast steel or malleable iron cover in non-hazardous areas, cast or malleable iron external screw cover type in hazardous (classified) areas for other than aluminum conduit. Use cast aluminum junction boxes with aluminum conduit.
  7. Pull boxes: painted or stainless steel fabricated sheet metal type with hinged screw cover in non-hazardous areas, cast aluminum with hinged bolted cover in hazardous (classified) areas for other than aluminum conduit. Use cast aluminum pull-boxes with aluminum conduits.
  8. Outlet boxes: Type FS or FD for exposed locations in non-hazardous areas, cast or malleable iron external screw cover type in hazardous (classified) areas for other than aluminum conduit. Use cast aluminum FS or FD outlet boxes in exposed locations in non-hazardous areas and cast aluminum external screw cover type in hazardous (classified) areas with aluminum conduit.
  9. Explosion-proof flexible couplings: UL listed and labeled for the hazardous (classified) area location, with stainless steel outer braid.
  10. Explosion-proof seal-offs: : UL listed and labeled for hazardous (classified) area location, cast metal, combination horizontal and vertical type, oversized for 40% wire fill to match allowable wire fill in conduit, with breather and drain.
  11. Terminal boxes: Enclosures for terminal blocks and electrical equipment and components: NEMA 250, with interior white painted steel panel, and hinged cover. Stainless steel sheet metal with flush 1/4-turn latch for non-hazardous areas, cast aluminum with hinged and bolted cast cover for hazardous (classified) locations.

## 2.5 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Liquidtight flexible metal conduit (LFMC): Flexible steel type UA conduit with PVC jacket, for use in accordance with NEC Article "Liquidtight Flexible Metal Conduit: Type LFMC", NRTL-listed and labeled under UL 360. Non-UL listed LFMC is not acceptable.
- B. Fittings: Insulated-throat screw-in connectors, NEMA FB 1, UL 514B, galvanized malleable iron or steel. Connectors shall be suitable for use as grounding fittings. Provide fittings with bonding jumper connections for exterior bonding jumpers at motors. Non-stainless steel parts shall be PVC-coated when used with PVC-coated RGS conduit.

## 2.6 FLEXIBLE METAL CONDUIT (FMC)

- A. Flexible metal conduit (FMC): Galvanized steel flexible steel conduit, for use in accordance with NEC Article "Flexible Metal Conduit: Type FMC", NRTL listed and labeled.

## 2.7 SINGLE CONDUIT HANGERS

- A. Manufacturers:
  - 1. Appleton
  - 2. Crouse-Hinds
  - 3. Erico International Corporation (Caddy)
  - 4. Killark
  - 5. Thomas and Betts (Kindorf, Steel City)
  - 6. Unistrut
  - 7. Or approved equal
- B. Single IMC and RMC attachment to structural steel: galvanized malleable iron PC (parallel clamp), EC (edge clamp), and RC (right angle clamp) type conduit-to-structural-steel clamps, or galvanized steel clevis hangers on galvanized steel threaded rods attached to galvanized malleable iron beam clamps. Bolts shall be galvanized steel.
- C. Single IMC and RMC attachment to concrete and masonry surfaces: galvanized malleable iron one-hole clamp and galvanized malleable iron clamp-back, or galvanized steel clevis hangers on galvanized steel threaded rods attached to galvanized steel rod hanger fitting bolted to concrete with expansion bolts. Bolts shall be galvanized steel.
- D. Single EMT attachment to structural steel: galvanized malleable iron beam clamp with hardened set screw and threaded hole for galvanized steel single-bolt conduit hanger or threaded rod and clevis hanger. Bolts shall be plated steel.
- E. Single EMT attachment to concrete and masonry surfaces: galvanized steel one-hole clamp and galvanized steel clamp-back, or plated steel single-bolt hangers on plated steel threaded rods attached to galvanized steel rod hanger fitting bolted to concrete with expansion bolts. Single piece combination one-hole clamp and clamp-back hangers are also acceptable. Bolts shall be plated steel.

## 2.8 MULTIPLE CONDUIT HANGERS (CHANNEL SUPPORTS)

### A. Manufacturers:

1. Aickinstrut
2. Cooper B-Line
3. GS Metals Inc.
4. Thomas & Betts (Kindorf)
5. Unistrut
6. Or approved equal

### B. Steel channel and associated hardware and fittings:

1. 1-1/2 x 1-1/2 inch nominal size, minimum. UL 5B listed and labeled. Thickness as required for the application, minimum 0.071 inches.
2. Deflection of individual support channels shall not exceed 1/180 of span when loaded with conduit plus 200 pounds.
3. Electro-galvanized: Electrolytically zinc coated conforming to ASTM B633 Type III SC1.
4. Pre-galvanized: Zinc coated by hot-dip process prior to roll forming. Zinc weight shall be G90 conforming to ASTM A 653.
5. Hot-dip galvanized after fabrication: Zinc-coated after all manufacturing and forming operations are completed. Zinc coating conforming to ASTM A 123 or A 153.
6. Stainless steel: Type 304 or better
7. Bolts: Grade 3 or better. Finish and materials to match channel, except that electroplated bolts shall be used with electro-galvanized steel channel, and stainless steel bolts shall be used with pre-galvanized, galvanized channel.
8. Conduit straps: PVC-coated galvanized steel with corrosion-resistant bolt.

## 2.9 CONDUIT SLEEVES AND SEALING FITTINGS

### A. Manufacturers:

1. Appleton
2. Crouse-Hinds
3. Spring City Electric
4. Thomas & Betts
5. O.Z. Gedney
6. Or approved equal

### B. Wall and Floor Sleeves:

1. Hot-dip galvanized steel or stainless steel pre-fabricated conduit sleeves with welded water-stop ring.
2. Galvanized steel, PVC, and polyethylene sleeves that are part of a manufacturer's standard wall seal assembly are also acceptable, subject to compliance with the fire resistant rating of the related walls and floors.

### C. Conduit-to-Sleeve Sealing Fittings:

1. Synthetic elastomeric gland with galvanized steel or stainless steel compression plates sized for the conduit OD and sleeve ID, or a manufactured assembly of



- hot-dip galvanized or stainless steel pressure plates, neoprene sealing grommets, and cast or malleable iron sealing bodies with zinc-rich epoxy coating, with factory-assembled galvanized steel, PVC, or polyethylene pipe sleeve. Segmented seals are also acceptable for conduit 4-inch trade size and larger.
2. Sealing fittings for wall penetrations with water or soil on one side shall have seals installed at both ends of the conduit sleeve or core-drilled hole.
  3. Where single conductors pass through a single sleeve, select materials to mitigate the effects of inductive heating.
  4. Provide ground wire attachment bolts for manufactured sleeve assemblies.
  5. Seals shall have fire ratings equal to the fire-resistant rating of the wall.

## 2.10 CONDUIT INTERIOR SEALING FITTINGS

### A. Manufacturers:

1. Crouse-Hinds
2. O.Z. Gedney
3. Thomas & Betts

### B. Conduit-to-Cable Sealing Fittings:

1. For exposed conduit ends without pull and junction boxes: Conduit fitting with synthetic elastomeric sealing gland with galvanized stainless steel compression plates drilled for the conduit ID and cable(s) OD, retained by threaded collar at the end of the conduit.
2. For exposed conduit ends entering pull or junction box: Conduit fitting suitable for installation of locknuts at conduit entry to sheet metal box, and bushing with synthetic elastomeric sealing gland with galvanized stainless steel compression plates drilled for the conduit ID and cable(s) OD, retained by threaded collar at the end of the conduit.
3. Seal shall be watertight at 20 feet of water pressure value.
4. Where single conductors pass through a seal, select materials to mitigate the effects of inductive heating.
5. Where bare stranded copper conductors pass through sealing fittings, place an exothermic weld in the stranded cable to prevent water from leaking through the strands.

## 2.11 CONDUIT EXPANSION AND DEFLECTION FITTINGS

### A. Manufacturers:

1. Crouse-Hinds
2. Spring City Electric
3. O.Z. Gedney
4. Thomas & Betts

### B. Conduit expansion and deflection fittings:

1. Suitable for the anticipated expansion joint elongation and deflection at each expansion joint.

2. Materials of construction: Hot dip galvanized ductile iron body, neoprene sealing sleeve, stainless steel clamps, tinned flexible copper equipment bonding jumper.

## 2.12 BOXES, ENCLOSURES, AND CABINETS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
  2. EGS/Appleton Electric.
  3. Erickson Electrical Equipment Company.
  4. Hoffman.
  5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
  6. O-Z/Gedney; a unit of General Signal.
  7. RACO; a Hubbell Company.
  8. Robroy Industries, Inc.; Enclosure Division.
  9. Scott Fetzer Co.; Adalet Division.
  10. Spring City Electrical Manufacturing Company.
  11. Thomas & Betts Corporation.
  12. Walker Systems, Inc.; Wiremold Company (The).
  13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.
- C. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
- D. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.
- E. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
- F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- G. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, galvanized, cast iron with gasketed cover.
- H. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
  1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
- I. Cabinets:
  1. NEMA 250, Type 12 painted steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
  2. Hinged door in front cover with flush 3-point latch and piano hinge.
  3. Key lock to match panelboards.

4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

### PART 3 - EXECUTION

#### 3.1 RACEWAY APPLICATIONS

- A. Indoor raceways, boxes, and fittings:
  1. Exposed (not subject to physical damage): EMT in above-grade, exposed locations.
  2. Exposed (subject to physical damage): RMC in above-grade, exposed locations.
  3. Concealed above suspended ceilings and within framed walls (dry areas): EMT
  4. Connections to vibrating equipment, and equipment requiring position adjustment: liquid tight flexible metal conduit in non-hazardous areas, explosion-proof flexible couplings in hazardous areas.
  5. NEC Damp and Wet Locations: RGS.
  6. Hazardous Classified Locations: RGS with fittings and boxes UL listed as suitable for the hazardous area classification shown on the Drawings.
  7. Conduit Support Channels: pre-galvanized.
  8. Boxes and fittings: as described in each raceway sub-section, and recommended as suitable for the particular application by the manufacturer.
  9. Enclosures: as specified in Division 16 Section "Electrical - General".
- B. Minimum Raceway Size: 3/4-inch trade size.

#### 3.2 INSTALLATION – GENERAL

- A. Deliver raceways, boxes, and fittings to job site in factory packaging. Store in clean, dry, weatherproof locations. Handle in accordance with manufacturer's recommendations.
- B. Install raceways, boxes, and fittings in accordance with manufacturer's installation instructions and NEC requirements as a minimum, and comply with the additional requirements described in this Section.
- C. Conduits shall be electrically and mechanically continuous, and suitable for use as an equipment-grounding conductor. Make up threaded joints wrench tight.
- D. When Coordination Drawings are specified in Part 1 of this Section, do not commence work until coordination drawings for the entire building are approved.
- E. Install and route emergency system raceways independently of other raceways systems, except where specific exceptions are permitted by the NEC.
- F. Fasten boxes in wet and damp areas using external mounting feet. Do not drill through boxes.
- G. Comply with NEC requirements for sizing outlet and junction boxes to accommodate wires, splices, and devices.

- H. Bends and offsets between pull points shall not exceed a cumulative total of 270 degrees unless otherwise approved by the Engineer. Maximum distance between pull points in conduit systems inside buildings shall be 100 feet unless otherwise approved by the Engineer.
- I. Raceways shall be routed in conformance with the following guidelines:
  - 1. Run conduits exposed, concealed, and underground as indicated on the Drawings.
  - 2. The preferred location for horizontal conduit runs is just below the ceiling structural supports.
  - 3. Do not obstruct access to equipment for operation and maintenance. Coordinate conduit runs with the work of other trades. Plan conduit runs to avoid existing lighting fixtures, and leave space for easy access to HVAC equipment, motors, and duct access hatches and doors.
  - 4. Route conduits around doors, windows, hatches, louvers, and other building openings, and around range and fume hoods.
  - 5. Group conduits on horizontal trapeze hangers or on wall-mounted steel channel where long horizontal runs are required.
  - 6. Do not run conduits through stairwells unless required for connection to equipment located in the stairwell.
  - 7. Maintain eight feet minimum clearance above finished floor wherever it is physically possible to do so. Comply with OSHA requirements for minimum headroom.
  - 8. Comply with raceway, boxes, and fitting details shown on the Drawings.
  - 9. Provide seals and flashings at roof penetrations in accordance with the recommendations of the roofing system supplier, or as shown on the Drawings.
  - 10. Where conduits enter the top of electrical equipment enclosures, install conduit interior sealing fittings to prevent entry of water and condensation from conduit.
  - 11. Concealed conduits shall not be run below floor slabs in basements unless otherwise indicated on the Drawings. Run concealed conduits embedded in basement floor slab.
- J. Cut conduits square with roller-wheel pipe cutter. Hacksaw cuts are acceptable only if the entire conduit is swabbed clean after cutting and threading is completed. Conduits cut in the field shall be threaded with sharp, standard NPT dies to achieve a fully cut tapered thread with a minimum of five full tapered threads at the end of the conduit. Running threads are not acceptable. Over- and under-threading are not acceptable. After threading, ream conduit ends, remove cuttings and debris from inside and outside of conduit, degrease, and apply cold spray-on zinc-rich paint.
- K. Conduit bends shall be made with conduit bending tools manufactured for the purpose. Comply with conduit and bending tool manufacturers' instructions.
- L. Do not cut or drill holes in structural beams and columns, or other structural members. Do not weld raceway supports to structural steel.
- M. Join raceways with fittings designed and approved for that purpose and make joints wrench tight. Comply with NEC requirements for minimum thread engagement in Hazardous Classified areas.

- N. Provide expansion, deflection, or expansion & deflection couplings at building expansion joints. Expansion and deflection fittings shall comply with UL 467 and UL 514B, and shall be suitable for the anticipated amount of movement and direction(s) of movement.
- O. Provide drain fittings at the first junction or pull box where conduits enter the building from outdoor and underground locations. Locate drains to permit observation of leakage without damage to electrical and mechanical equipment.
- P. Three-piece (Erickson) couplings shall be used where it is not possible to turn conduits to make up threaded joints. Threadless fittings are not generally acceptable. Application for permission to use threadless fittings at particular locations shall be made in writing to the Engineer, and threadless fittings shall not be used unless approved.
- Q. Complete raceway installation before starting conductor installation.
- R. Apply firestopping to cable and raceway penetrations of fire-rated floor and wall assemblies to achieve fire-resistance rating of the assembly. Firestopping materials and installation requirements are specified in Division 7 Section "Through-Penetration Firestop Systems".
- S. Boxes and poke-through assemblies in fire-rated floors and walls shall be UL-listed for the application. Comply with UL and manufacturer's requirements for installation.
- T. Make bends and offsets so ID is not reduced. Keep legs of bends in the same plane and keep straight legs of offsets parallel, unless otherwise indicated.
- U. Terminations:
  - 1. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box. Install bushings wrench-tight.
  - 2. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are used, align raceways so coupling is square to box; tighten chase nipple so no threads are exposed.
  - 3. Install temporary closures to prevent foreign matter from entering raceways.
- V. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.
- W. Install explosion-proof and moisture seal-off fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
  - 1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
  - 2. At hazardous classified locations and where otherwise required by the NEC.

- X. Flexible Connections:
  - 1. Recessed and semi-recessed lighting fixtures: maximum of 72 inches of flexible metal conduit with UL-listed grounding fittings
  - 2. Motors and equipment subject to vibration or movement: maximum 36 inches of LFMC up to 2 inch trade size, up to 72 inches in larger sizes, and explosion-proof couplings of adequate length for the installed conditions in hazardous (classified) locations.
  - 3. Install separate equipment bonding jumper across flexible connections where required by the NEC.
- Y. Telephone and Signal System Raceways, 2-Inch Trade Size and Smaller: In addition to above requirements, install raceways in maximum lengths of 150 feet and with a maximum of two 90-degree bends or equivalent. Separate lengths with pull or junction boxes where necessary to comply with these requirements.

### 3.3 INSTALLATION – EXPOSED RACEWAYS, BOXES AND FITTINGS

- A. Install raceways, boxes, and fittings exposed as indicated on the Drawings.
- B. Install exposed raceways parallel or at right angles to nearby surfaces or structural members.
  - 1. Run raceways together in-groups on common supports wherever possible.
  - 2. Do not use mechanical piping or ceiling supports to support conduit runs.
- C. Make concentric bends in parallel exposed conduit runs. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.
- D. Surface-mounted channel supports shall be 1-1/2 inch x 1-1/2 inch channel bolted to wall or ceiling with expansion anchors.
- E. Suspended (trapeze) channel supports shall be 1-1/2 inch x 1-1/2 inch channel suspended from minimum 3/8 inch threaded rod. Fasten rods to structural steel with beam clamps or channel assemblies designed specifically for each application. Fasten threaded rods to concrete with expansion bolts and threaded rod hanger, or concrete channel inserts
- F. Installation near mechanical piping: Keep raceways at least 6 inches away from parallel runs of mechanical ducts, vents, and mechanical piping, measured from the insulation. Do not install horizontal raceway runs directly below water and steam piping except for right angle crossings.
- G. Install electrical enclosures and cabinets square and plumb. Support at each corner.
- H. At building interior floor and roof penetrations, provide floor sleeves 2 inches above finished floor level with fire-rated conduit sealing fittings. Provide flashing at roof penetrations in accordance with roofing system manufacturer's recommendations.

3.4 INSTALLATION – CONCEALED RACEWAYS, BOXES AND FITTINGS

- A. Install raceways, boxes, and fittings concealed, including above suspended ceilings, in partitions, and within or below floor slabs, as indicated on the Drawings.
- B. Install concealed raceways with a minimum of bends in the shortest practical distance, considering type of building construction and obstructions, unless otherwise indicated.

3.5 PROTECTION DURING CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure coatings and finishes without damage or deterioration at time of Substantial Completion.
  - 1. Repair damage to galvanize finishes with zinc-rich paint recommended by manufacturer.
  - 2. Repair damage to paint finishes with matching touchup coating recommended by manufacturer.

3.6 CLEANING & PAINTING

- A. Swab conduits clean after installation and plug ends until conductors are installed.
- B. Remove dust, construction debris, plaster and paint spatters from raceways, boxes, and fittings after all trades have completed their work, and prior to painting.
- C. After completing installation of exposed, factory-finished raceways and boxes, inspect exposed finishes, touch up damage, and prepare for finish painting in accordance with Division 9 Section "Field Painting".

3.7 IDENTIFICATION

- A. Identify raceways, boxes, and fittings as described in Division 16 Section "Electrical Identification".

END OF SECTION

## SECTION 16120

### WIRE AND CABLE

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Provide a complete system of wiring and cabling, including wire and cable pulling, splicing, and termination accessories, as shown on the Drawings and in conformance with the requirements in this Section and Division 16 Section "Electrical - General".

##### 1.2 RELATED DOCUMENTS

- A. Related requirements are also specified in the following Sections:
  - 1. Division 16 Section "Electrical Identification" for identification and color coding requirements.

##### 1.3 DEFINITIONS

- A. In addition to the definitions in Division 16 Section "Electrical - General", the following definitions apply to this Section:
  - 1. MI: Mineral Insulated
  - 2. MTW: machine tool wire, 90 deg. C max in dry locations, 60 deg. C max in wet locations
  - 3. NMC: non-metallic jacketed cable
  - 4. RTD: resistance temperature detector
  - 5. SE: service entrance cable
  - 6. THHN: NEC and UL designation for flame-retardant and heat resistant thermoplastic insulation, gas and oil resistant nylon jacketed, suitable for dry locations only, 90 deg. C. max in dry locations
  - 7. THW: NEC and UL designation for flame-retardant, moisture resistant thermoplastic insulation suitable for dry and wet locations, 75 deg. C. max
  - 8. THWN: NEC and UL designation for flame retardant and moisture-resistant thermoplastic insulation, gas and oil resistant nylon jacketed, suitable for dry and wet locations, 75 deg. C. max in wet locations
  - 9. TSP: twisted shielded pair
  - 10. UF: underground feeder
  - 11. USE: underground service entrance cable
  - 12. XHHW: NEC and UL designation for (thermoset) cross-linked synthetic polymer insulation suitable for dry and wet locations, 90 deg. C. max in dry locations, 75 deg. C max in wet locations
  - 13. XHHW-2: NEC designation for (thermoset) cross-linked synthetic polymer insulation suitable for dry and wet locations, 90 deg. C. max in wet and dry locations.



## 1.4 REFERENCE STANDARDS

- A. Conform to the following standards in effect at the time of bid submittal:
1. AEIC CG5-90 Underground Extruded Power Cable Pulling Guide
  2. ICEA P-51-432-1970 Copper Conductors, Bare & Weather Resistant
  3. ICEA P-56-520-1984 Cable Tray Fire Test Report (Round Robin Project)
  4. ICEA S-58-679-1996 Standard for Control Cable Conductor Identification
  5. ICEA S-95-658 / NEMA WC70 Non-Shielded Power Cables Rated 2000 V or Less
  6. ICEA T-22-294-1983 Test Procedures for Extended Time-Testing of Wire and Cable Insulations for Service in Wet Locations
  7. ICEA T-29-520-1986 Vertical Cable Tray Flame Tests @ 210,000 Btu
  8. ICEA T-30-520-1986 Vertical Cable Tray Flame Tests @ 70,000 Btu
  9. ICEA T-33-655-1994 Low Smoke, Halogen-Free Polymeric Jackets
  10. IEEE 576-2000 Recommended Practice for Installation, Termination, and Testing of Insulated Power Cable as Used in Industrial and Commercial Applications
  11. UL 4 Armored Cable
  12. UL 44 Thermoset-insulated Wires and Cables
  13. UL 62 Flexible Cord and Fixture Wire
  14. UL 83 Thermoplastic Insulated Wires and Cable
  15. UL 486A Wire Connectors and Soldering Lugs for Use with Copper Conductors
  16. UL 486B Wire Connectors for Use with Aluminum Conductors
  17. UL 486C Splicing Wire Connectors
  18. UL 486D Insulated Wire Connector Systems for Underground Use in Damp or Wet Locations
  19. UL 493 Thermoplastic Insulated Underground Feeder and Branch Circuit Cables
  20. UL 1569 Metal-Clad Cable

## 1.5 SUBMITTALS

- A. Product Data: For each type of product specified herein, including catalog data, technical specifications, evidence of UL listing, and evidence of manufacturer's certification to ISO 9000:2000 or an equivalent quality management system certification acceptable to the Engineer.
- B. Qualifications and experience proposal for the electrical testing firm.
- C. Samples: 16-inch (400-mm) lengths of each size and type of approved wire and cable, mounted on a sample board of 1/2 inch AC exterior plywood painted white.
- D. Electrical Acceptance Test reports.
- E. Operation and maintenance data is not required, however, approved shop drawing submittals are required to be included for the record in the Operation and Maintenance Manuals, as described in Division 16 Section "Electrical - General".

## 1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain all wire and cable of a particular type through one source from a single qualified manufacturer.
- B. To be a qualified manufacturer, wire, cable, splice and termination components manufacturers shall have accreditation to ISO 9000:2000 or an equivalent quality management system acceptable to the Engineer, and shall offer NRTL-listed and labeled products.
- C. Testing firm shall be qualified as defined by OSHA in 29 CFR 1910.7, shall be a member of the InterNational Electrical Testing Association, shall be acceptable to the AHJ, and shall have supervision as follows:
  - 1. Testing Firm's Field Supervisor: Qualifications and experience for the person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- D. Wire and cable and accessories: Listed and labeled as defined in NEC Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

## PART 2 - PRODUCTS

### 2.1 APPLICATIONS

- A. Refer to Part 3 for wire and cable applications.

### 2.2 MANUFACTURERS

- A. MANUFACTURERS

### 2.3 BUILDING WIRE AND MULTI-CONDUCTOR POWER CABLES

- A. Manufacturers:
  - 1. Alcan Cable, Div. of Alcan Aluminum Corp.
  - 2. American Insulated Wire Corp.
  - 3. Belden Wire and Cable Co.
  - 4. Cerro Wire and Cable Co., Inc.
  - 5. General Cable Industries Inc.
  - 6. Okonite Co.
  - 7. Pirelli Cable Corp.
  - 8. Rome Cable Corp.
  - 9. Southwire Co.
  - 10. Others approved equal.

- B. Conductor Material: Copper, [stranded conductor] [solid conductor for No. 10 AWG and smaller, stranded for No. 8 AWG and larger].
- C. Building Wire and Multi-conductor Cable Insulation Types: Type THHN-THWN.

## 2.4 CONTROL AND INSTRUMENTATION WIRE AND CABLE

- A. Manufacturers:
  - 1. Belden Wire and Cable Co.
  - 2. Clifford of Vermont / TVC
  - 3. General Cable Co., Inc.
  - 4. Okonite Co.
  - 5. Rome Cable Corp.
  - 6. Southwire Co.
  - 7. Others approved equal.
- B. Control wire: 600V type THWN insulated stranded copper conductors in conduit, minimum size #14 AWG, UL listed and suitable for installation in conduit.
- C. Power-limited tray cable, in cable tray: Multi-conductor type THHN/THWN, minimum size #14 AWG, with overall galvanized steel armor and PVC outer sheath. UL listed and suitable for installation in conduit and cable tray.

## 2.5 WIRE AND CABLE CONNECTORS AND SPLICES

- A. Manufacturers:
  - 1. 3M Company, Electrical Products Division
  - 2. AMP Incorporated / Tyco International
  - 3. Burndy
  - 4. Square D
  - 5. Thomas and Betts
- B. Description: Factory fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.
- C. Wirenuts: Spring type rated for copper wire, sized for the actual number of wires connected.
- D. Splices: Tin-plated copper compression type. Pre-insulated crimp-on connectors may be used for #14 AWG control wires. Long barrel splices shall be used for #1/0 AWG and larger.
- E. Connection lugs: Tin-plated copper compression type with NEMA drilling. Long-barrel lugs shall be used for #1/0 AWG and larger wire, and for ground wires as specified in Division 16 Section "Grounding".

- F. Connections at molded case circuit breakers, disconnect switches, and other equipment provided with wire termination lugs: NRTL-listed, suitable for use with the copper wire size to be connected.

### PART 3 - EXECUTION

#### 3.1 INSPECTION

- A. Ensure that conduits, duct banks, manholes, handholes, and pullboxes are clean and clear of construction debris prior to installation of wire and cable.

#### 3.2 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wire and cables to construction site and unload in accordance with manufacturer's recommendations.
- B. Store and transport reels in conformance with the manufacturer's printed instructions.
- C. Wire and cable ends shall be taped watertight until terminations and splices are completed.

#### 3.3 WIRE AND CABLE APPLICATIONS

- A. Branch Circuits: Type THHN-THWN, single conductors in raceway.

#### 3.4 CABLE LAYING AND PULLING

- A. Install cables in accordance with manufacturer's installation instructions, IEEE 576 and AEIC CG5-90.
- B. Run wires and cables in raceways as shown on the Drawings and as specified in Division 16 Section "Raceways, Boxes, and Fittings".
- C. Use cable manufacturer approved water-based wire pulling lubricant for pulling in wire and cables in conduit. Lubricant shall be UL-listed and shall be suitable for the conductor insulation.
- D. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- E. Pull wire and cables in accordance with the manufacturer's installation recommendations and requirements, with emphasis on the following:
  - 1. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values

2. Lubricate cables with pulling compound or lubricant that is approved by the cable manufacturer and will not deteriorate conductor or insulation materials of construction.
  3. Follow cable manufacturer's recommendations for attaching pulling means to cables, including fish tape, cable, rope, and basket-weave cable grips. Do not attach to cable jacket alone for pulling.
  4. Rig pulleys and use pull ropes for pulling cables into raceways.
  5. Use tension indicators and electric-motor driven capstan rollers for pulling cables that are too large for pulling by hand.
  6. Observe manufacturer's recommendations for the minimum wire and cable bending radius for each type and size of wire and cable provided for this project.
- F. Emergency circuit wires and cables shall be routed and protected from fire and other hazards in accordance with locals codes, in a manner acceptable to the AHJ.
- G. Seal around cables penetrating fire-rated elements according to Division 7 Section "Through-Penetration Firestop Systems."
- H. Identify and color-code conductors and cables according to Division 16 Section "Electrical Identification."

### 3.5 WIRE AND CABLE CONNECTIONS AND TERMINATIONS

- A. Tighten electrical connectors and terminals according to the manufacturer's published torque tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- B. For compression lugs and splices, use the lug manufacturer's compression tools and conform to the manufacturer's written instructions.
- C. Control wires shall be run from terminal to terminal without splices, and no more than two wires under a terminal screw.
- D. Splices and terminations shall be insulated with boots, heat shrink tubing, or tape to 600 volts in accordance with the insulation product manufacturer's written instructions.
- E. Feeder taps shall be made with cast bronze 2-bolt or 4-bolt connectors with built-in conductor spacer, suitable for the run and tap conductor sizes. Split bolt connectors shall not be used unless approved by the Engineer.
- F. Wiring at Device Outlets: Install conductor at each outlet, leaving 8 inches (200 mm) of wire coiled in the box for connection to wiring devices. Wiring devices that are suitable for solid wire only shall be pigtailed to stranded wire with solid wire 6 inches long using wirenuts.
- G. Install a green insulated NEC-sized grounding jumper from a green ground screw in the outlet box to the receptacle or switch green ground screw.

- H. Building wire connections to flexible motor leads shall be made with compression connectors bolted back-to-back with silicone-bronze bolts and insulated for 600 volts.
- I. Multi-conductor cables shall be installed and terminated in accordance with the cable manufacturer's installation instructions.
- J. Shielded cable conductors shall be terminated with insulated crimp-on connectors suitable for the terminals provided with the equipment, or tinned for connection to terminals which are not suitable for crimp-on connectors. A minimum two inch length of heat shrink tubing shall be applied over each insulated conductor and the insulated portion of the crimp-on connector, and a separate piece of larger diameter heat shrink tubing shall cover the end of the cable jacket and cut shield, and overlap the individual conductor heat shrink tubing. Connect drain wire to the ground bus at the transmitter end only except where otherwise indicated on the Contract Drawings and approved shop drawings.

### 3.6 ELECTRICAL ACCEPTANCE TESTING

- A. Testing: Owner will engage a qualified testing agency to perform the following field quality control testing:
- B. Testing: Engage a qualified testing agency to perform the following field quality control testing:
- C. Testing: Perform the following field quality control testing:
  - 1. After installing conductors and cables and before electrical circuitry has been energized, test for conformance with requirements.
  - 2. Perform each electrical test and visual and mechanical inspection stated in NETA Acceptance Testing Specification, Section 7.3.2 "Cables, Low Voltage, 600 Volt Maximum". Certify conformance with test parameters.
- D. Test Reports: Prepare a written report to record the following:
  - 1. Test procedures used.
  - 2. Test results that conform to requirements.
  - 3. Test results that do not conform to requirements and corrective action taken to achieve conformance with requirements.

END OF SECTION

SECTION 16750

FIRE ALARM SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide a complete and fully functional Fire Alarm System as shown on the Drawings and specified herein, with demolition of the existing conventional system as necessary and required.
- B. This Section describes requirements for fire detection and alarm system components, including alarm initiation devices, alarm indicating devices, fire alarm control and annunciator panels, and system communications.
- C. The original existing Fire Alarm Control Panel (FACP) and existing conventional system shall be demolished.
- D. An existing analog/addressable Fire Alarm Control Unit (FACU) will be upgraded and equipped with a handheld microphone and will be capable of providing live and prerecorded verbal alerts and messages. The existing analog/addressable FACU is a SimplexGrinnell Model 4100U. The FACU shall also be equipped with an integral signal input module in conjunction with a new ATI Systems Remote Terminal Unit (RTU) for connection to the campus for emergency communications. The ATI communications signal system method, equipment, procurement, installation, inspection and testing is to be provided, installed and tested by the fire alarm contractor. The RTU programming will be performed by the USC Police/Security Department.
- E. Asbestos has been identified in the scope of work identified within this specification. The contractor shall take all necessary precautions with respect to the possibility of asbestos and make every effort to avoid disturbing areas that have been identified as containing asbestos. Any asbestos found by the contractor shall be reported to the owner or owner's representative immediately in writing and all work shall be temporarily stopped until notified in writing by the owner or owner's representative.

1.2 RELATED DOCUMENTS

- A. Related requirements are also specified in the following Sections:
  - 1. Division 07 Section:
    - a. 07841 - Firestopping
  - 2. Division 16 Sections:
    - a. 16010 - "Electrical - General"
    - b. 16071 - "Seismic Protection for Electrical Work"
    - c. 16095 - "Electrical Identification"
    - d. 16110 - "Raceways, Boxes and Fittings"
    - e. 16120 - "Wire and Cable"

### 1.3 REFERENCES

- A. Comply with the codes and standards identified herein, and specifications, except where more stringent requirements have been specified:
  - 1. International Building Code (IBC), 2009 Edition
  - 2. International Existing Building Code (IEBC), 2009 Edition
  - 3. International Fire Code (IFC), 2009 Edition
  - 4. International Mechanical Code (IMC), 2009 Edition
  - 5. NFPA 70 National Electrical Code (NEC), 2008 Edition
  - 6. NFPA 72 National Fire Alarm Code, 2010 Edition
  - 7. Underwriters Laboratories or equivalent NRTL testing standards, current editions

### 1.4 DEFINITIONS

- A. AHJ: Authority Having Jurisdiction
- B. FACU: Fire alarm control unit (panel).
- C. FAA: Remote Annunciator Panel
- D. LED: Light-emitting diode.
- E. NFPA: National Fire Protection Association
- F. NICET: National Institute for Certification in Engineering Technologies.
- G. RTU: Remote Transmitter Unit
- H. Definitions in NFPA 72 apply to fire alarm terms used in this Section.

### 1.5 SYSTEM DESCRIPTION

- A. Noncoded, addressable system; multiplexed signal transmission dedicated to fire alarm service only.

### 1.6 PERFORMANCE REQUIREMENTS

- A. Comply with the reference identified in Section 1.2, References.
- B. Premises protection includes Assembly, Group A-3, and Business, Group B, occupancy.
- C. Fire alarm signal initiation shall be by one or more of the following devices:
  - 1. Manual Fire Alarm Box.
  - 2. Heat Detectors.
  - 3. Smoke Detectors.
  - 4. Fire Sprinkler Water Flow Switch.
  - 5. Fire Pump Running signal.



6. Verified automatic alarm operation of Smoke Detectors.
- D. Fire alarm signal shall initiate the following actions:
  1. Alarm notification appliances shall operate continuously.
  2. Identify alarm at the FACU and remote annunciators.
  3. Transmit an alarm signal to the remote alarm receiving station.
  4. Activate voice/alarm communication system.
  5. Record events in the system memory.
- E. System trouble signal initiation shall be by one or more of the following devices or actions:
  1. Open circuits, shorts and grounds of wiring for initiating device, signaling line, and notification-appliance circuits.
  2. Opening, tampering, or removal of alarm-initiating and supervisory signal-initiating devices.
  3. Loss of primary power at the FACU.
  4. Ground or a single break in FACU internal circuits.
  5. Abnormal ac voltage at the FACU.
  6. A break in standby battery circuitry.
  7. Failure of battery charging.
  8. Abnormal position of any switch at the FACU or annunciator.
- F. System Trouble and Supervisory Signal Actions: Visual and audible trouble and supervisory signals and visual indication of their restoration to normal shall be indicated at the FACU and Remote Annunciator Unit.

## 1.7 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings:
  1. Shop Drawings shall be prepared by persons with the following qualifications:
    - a. Trained and certified by manufacturer in fire alarm system design.
    - b. NICET Certified Level III Fire Alarm Technician.
  2. System Operation Description: Detailed description for this Project, including method of operation and supervision of each type of circuit and sequence of operations for manually and automatically initiated system inputs and outputs. Manufacturer's standard descriptions for generic systems are not acceptable.
  3. Device Address List: Coordinate with final system programming.
  4. System riser diagram with device addresses, conduit sizes, and cable and wire types and sizes.
  5. Wiring Diagrams: Power, signal, and control wiring. Include diagrams for equipment and for system with all terminals and interconnections identified. Show wiring color code.
  6. Batteries: Size calculations.
  7. Duct Smoke Detectors: Performance parameters and installation details for each detector, verifying that each detector is listed for the complete range of air velocity, temperature, and humidity possible when air-handling system is operating.

8. Voice/Alarm Signaling Service: Equipment rack or console layout, grounding schematic, amplifier power calculation, and single-line connection diagram.
- C. Qualification Data: For Installer.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: For fire alarm system to include in emergency, operation, and maintenance manuals. Comply with NFPA 72, Appendix A, recommendations for Owner's manual. Include abbreviated operating instructions for mounting at the FACU.
- F. Submittals to Authorities Having Jurisdiction: In addition to distribution requirements for submittals specified in Division 1 Section "Submittals," make an identical submittal to authorities having jurisdiction. To facilitate review, include copies of annotated Contract Drawings as needed to depict component locations. Resubmit if required to make clarifications or revisions to obtain approval. On receipt of comments from authorities having jurisdiction, submit them to Engineer for review.
- G. Documentation:
  1. Approval and Acceptance: Provide the "Record of Completion" form according to NFPA 72 to Owner.
  2. Record of Completion Documents: Provide the "Permanent Records" according to NFPA 72 to Owner. Format of the written sequence of operation shall be the optional input/output matrix.
    - a. Hard copies on paper to Owner.

#### 1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.
- B. Installer Qualifications: Work of this Section be performed by personnel certified by NICET as a Level III Fire Alarm Technician.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

#### 1.9 PROJECT CONDITIONS

- A. Interruption of Existing Fire Alarm Service: Do not interrupt fire alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:
  1. Notify Engineer, Construction Manager, Owner and AHJ no fewer than five (5) business days in advance of proposed interruption of fire alarm service.
  2. Do not proceed with interruption of fire alarm service without Engineer's,

Construction Manager's, Owner's and AHJ's written permission.

#### 1.10 SEQUENCING AND SCHEDULING

- A. Existing Fire Alarm Equipment: Maintain fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service and label existing fire alarm equipment "NOT IN SERVICE" until removed from the building.
- B. Equipment Removal: After acceptance of the new fire alarm system, remove existing disconnected fire alarm equipment. Existing FACP and ancillary panels shall be salvaged and provided to USC Fire Safety / Campus Security.

#### 1.11 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Lamps for Remote Indicating Lamp Units: Quantity equal to 10 percent of amount installed, but not less than 1 unit.
  - 2. Lamps for Strobe Units: Quantity equal to 10 percent of amount installed, but not less than 1 unit.
  - 3. Smoke and Fire, Detectors: Quantity equal to 10 percent of amount of each type installed, but not less than 1 unit of each type.
  - 4. Detector Bases: Quantity equal to 2 percent of amount of each type installed, but not less than 1 unit of each type.
  - 5. Keys and Tools: One extra set for access to locked and tamper proofed components.
  - 6. Audible and Visual Notification Appliances: One of each type installed.
  - 7. Fuses: Two of each type installed in the system.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
  - 1. FACU and Equipment:
    - a. SimplexGrinnell LP; a Tyco International Company.
  - 2. Wire and Cable:
    - a. Comtran Corporation.
    - b. Helix/HiTemp Cables, Inc.; a Draka USA Company.
    - c. West Penn Wire/CDT; a division of Cable Design Technologies.
    - d. Others approved equal.

## 3. Audible and Visual Signals:

## a. SimplexGrinnell.

## 2.2 EXISTING FIRE ALARM SYSTEM

- A. The existing fire alarm and detection systems will be completely demolished, with the exception of selected areas on the ground floor of the Office Building. The original existing fire alarm control panel (FACP) and appurtenances in the Office Building shall be removed, salvaged and returned directly to the University immediately after removal. A new FACU, manufactured by SimplexGrinnell, Model 4100U, has been recently installed in the Office Building. The Simplex 4100U panel shall remain to be upgraded and serve as the single primary FACU. .

## 2.3 FIRE ALARM CONTROL UNIT (FACU)

## A. General Description:

1. The existing SimplexGrinnell 4100U FACU panel shall remain and be upgraded to include all components, programming, etc., to meet the design requirements, for a complete, fully operational and code compliant system.
2. Modular, power-limited design with electronic modules, UL 864 listed.
3. Addressable initiation devices that communicate device identity and status.
  - a. Smoke sensors shall additionally communicate sensitivity setting and allow for adjustment of sensitivity at the FACU.
  - b. Temperature sensors shall additionally test for and communicate the sensitivity range of the device.
4. Addressable control circuits for operation of mechanical equipment.

B. Alphanumeric Display and System Controls: Arranged for interface between human operator at the FACU and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type.
2. Keypad: Arranged to permit entry and execution of programming, display, and control commands and to indicate control commands to be entered into the system for control of smoke-detector sensitivity and other parameters.
3. Function Keys: Minimum of six (6) programmable function keys for quick disabling select functions of the fire alarm and detection system. The programmable function keys are in addition to other function keys and switches addressed in this specification. Coordinate functions and programming of function keys with the USC Fire Marshal.

## C. Circuits:

1. Signaling Line Circuits: NFPA 72, Class B.
  - a. System Layout: Utilize no more than 80% of the signaling line circuit capacity.
2. Notification-Appliance Circuits: NFPA 72, Class B.
3. Relay Circuits: NFPA 72, Class B.
4. Actuation of alarm notification appliances, emergency voice communications, annunciation, elevator recall shall occur within 10 seconds after the activation of

- an initiating device.
  - 5. Electrical monitoring for the integrity of wiring external to the FACU for mechanical equipment shutdown and magnetic door-holding circuits is not required, provided a break in the circuit will cause doors to close and mechanical equipment to shut down.
- D. Smoke-Alarm Verification:
- 1. Initiate a positive alarm sequence feature shall be permitted if approved by the authority having jurisdiction under the following conditions:
    - a. The alarm verification feature is not initially enabled unless conditions or occupant activities that are expected to cause nuisance alarms are anticipated in the area that is protected by the smoke/heat detectors. Enabling of the alarm verification feature shall be protected by password or limited access.
    - b. A smoke/heat detector that is continuously subject to a smoke concentration above alarm threshold does not delay the system functions, actuation time or fire safety functions by more than one minute.
    - c. Actuation of an alarm-initiating device other than a smoke/heat detector causes the system function identified in sub-section b above without additional delay.
    - d. The current status of the alarm verification feature is shown on the record of completion.
  - 2. Initiate audible and visible indication of an "alarm verification" signal at the FACU.
  - 3. Activate a listed and approved "alarm verification" sequence at the FACU and the detector.
  - 4. Sound general alarm if the system is not reset by trained personnel within the 60-second investigation phase.
  - 5. Cancel FACU indication and system reset if the alarm is not verified.
- E. Notification-Appliance Circuit: Operation shall sound in a temporal pattern and pre-recorded voice message, complying with ANSI S3.41.
- F. Elevator Controls: Smoke detector initiation located in the elevator machine room and elevator lobbies recalls associated elevator to prescribed floor level and activates building notification appliances and annunciator. Smoke detection is not required at the top of the elevator shaft due to no existing sprinkler protection. However, provisions shall be incorporated into the design, and components, conduit, wiring, etc., shall be installed in the field, such that future smoke detection at the top of the shaft can be added and incorporated in the system.
- G. Elevator Controls: Heat detector initiation located in the machine room and top of elevator shaft (when heat detection is provided) shall shut down elevators associated with the location without time delay.
- 1. A field-mounted relay actuated by the fire detector or the FACU shuts down elevator power by operating a shunt trip circuit breaker feeding the associated elevator and activates building notification appliances and annunciator.
  - 2. Illuminate fire hat in elevator cabinet.
- H. Heat Smoke detection is not required in the elevator machine room or at the top of the

elevator shaft due to no existing sprinkler protection. However, provisions shall be incorporated into the design, and components, conduit, wiring, etc., shall be installed in the field, such that future heat detection in the elevator room and at the top of the shaft can be added and incorporated in the system.

- I. Power Supply for Supervision Equipment: Supply for audible and visual equipment for supervision of the ac power shall be from a dedicated dc power supply, and include emergency power source, and power for the dc component shall be from the ac supply.
- J. Alarm Silencing, Trouble, and Supervisory Alarm Reset: Manual reset at the FACU and remote annunciators, after initiating devices are restored to normal.
  - 1. Silencing-switch operation halts alarm operation of notification appliances and activates an "alarm silence" light. Display of identity of the alarm zone or device is retained.
  - 2. Subsequent alarm signals from other devices or zones reactivate notification appliances until silencing switch is operated again.
  - 3. When alarm-initiating devices return to normal and system reset switch is operated, notification appliances operate again until alarm silence switch is reset.
- K. Walk Test: A test mode to allow one person to test alarm and supervisory features of initiating devices. Enabling of this mode shall require the entry of a password. The FACU and annunciators shall display a test indication while the test is underway. If testing ceases while in walk-test mode, after a preset delay, the system shall automatically return to normal.
- L. Remote Smoke-Detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and control of changes in those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory.
- M. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, trouble, and supervisory signals to a remote alarm station through a digital alarm communicator transmitter and telephone lines to USC Fire Safety / Campus Security.
- N. Voice/Alarm Signaling Service: A central emergency communication system with redundant microphones, preamplifiers, amplifiers, and tone generators provided as a special module that is part of the FACU.
  - 1. Indicated number of alarm channels for automatic, simultaneous transmission of different announcements to different zones, or for manual transmission of announcements by use of the central-control microphone. Amplifiers shall be UL 1711 listed.
    - a. Allow the application of and evacuation signal to indicated number of zones and, at the same time, allow voice paging to the other zones selectively or in any combination.
    - b. Programmable tone and message sequence selection.

- c. Standard digitally recorded messages for "Evacuation" and "All Clear."
    - d. Generate tones to be sequenced with audio messages of the type recommended by NFPA 72 and that are compatible with tone patterns of the notification-appliance circuits of the FACU.
  - 2. Notification-Appliance Circuits: NFPA 72, Class A.
  - 3. Status Annunciator: Indicate the status of various voice/alarm speaker zones.
  - 4. Preamplifiers, amplifiers, and tone generators shall automatically transfer to backup units, on primary equipment failure.
- O. Service Modem: Ports shall be RS-232 for system printer if/when provided and for connection to a dial-in terminal unit.
- 1. The dial-in port shall allow remote access to the FACU for programming changes and system diagnostic routines. Access by a remote terminal shall be by encrypted password algorithm.
  - 2. Transmission to remote alarm receiving station shall automatically transmit alarm, supervisory and trouble signals to a remote alarm station via a digital dialer with contact identification.
- P. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signal, supervisory signal and supervisory and digital alarm communicator transmitter shall be powered by the 24-V dc source.
- 1. The alarm current draw of the entire fire alarm system shall not exceed 80 percent of the power-supply module rating.
  - 2. Power supply shall have a dedicated fused safety switch for this connection at the service entrance equipment. Paint the switch box red and identify it with "FIRE ALARM SYSTEM POWER."
- Q. Secondary Power: 24-V dc supply system with batteries and automatic battery charger and an automatic transfer switch.
- 1. Batteries: Sealed, lead acid.
  - 2. Battery and Charger Capacity: Comply with NFPA 72.
- R. Surge Protection:
- 1. Install transient voltage surge protection on normal ac power circuits for the FACU and its accessories in accordance with NFPA 70, Article 800.
  - 2. Install surge protectors recommended by FACU and RTU manufacturer. Install on all system wiring external to the building housing the FACU.

## 2.4 MANUAL FIRE ALARM BOXES

- A. Description: UL 38 listed; finished in red with molded, raised-letter operating instructions in contrasting color. Station shall show visible indication of operation. Mounted on recessed outlet box; if indicated as surface mounted, provide manufacturer's surface back box.
- 1. Double-action mechanism requiring two actions to initiate an alarm, breaking-glass or plastic-rod, pull-lever type. With integral addressable module, arranged to communicate manual-station status (normal, alarm, or trouble) to the FACU.

2. Station Reset: Key- or wrench-operated switch.
- 3.

## 2.5 SYSTEM SMOKE DETECTORS

### A. General Description:

1. UL 268 listed, operating at 24-V dc, nominal.
2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to the FACU.
3. Plug-in Arrangement: Detector and associated electronic components shall be mounted in a plug-in module that connects to a fixed base. Provide terminals in the fixed base for connection of building wiring.
4. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
5. Integral Visual-Indicating Light: LED type. Indicating detector has operated and power-on status.
6. Remote Control: Unless otherwise indicated, detectors shall be analog-addressable type, individually monitored at the FACU for calibration, sensitivity, and alarm condition, and individually adjustable for sensitivity from the FACU.

### B. Photoelectric Smoke Detectors:

1. Sensor: LED or infrared light source with matching silicon-cell receiver.
2. Detector Sensitivity: Between 2.5 and 3.5 percent/foot (0.008 and 0.011 percent/mm) smoke obscuration when tested according to UL 268A.

### C. Ionization Smoke Detector:

1. Sensor: Responsive to both visible and invisible products of combustion. Self-compensating for changes in environmental conditions.
2. Detector Sensitivity: Between 0.5 and 1.7 percent/foot (0.0016 and 0.0056 percent/mm) smoke obscuration when tested according to UL 268A.

### D. Duct Smoke Detectors:

1. Photoelectric Smoke Detectors:
  - a. Sensor: LED or infrared light source with matching silicon-cell receiver.
  - b. Detector Sensitivity: Between 2.5 and 3.5 percent/foot (0.008 and 0.011 percent/mm) smoke obscuration when tested according to UL 268A.
2. UL 268A listed, operating at 24-V dc, nominal.
3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to the FACU.
4. Plug-in Arrangement: Detector and associated electronic components shall be mounted in a plug-in module that connects to a fixed base. The fixed base shall be designed for mounting directly to the air duct. Provide terminals in the fixed base for connection to building wiring.
  - a. Weatherproof Duct Housing Enclosure: UL listed for use with the supplied detector. The enclosure shall comply with NEMA 250 requirements for Type 4X.
5. Self-Restoring: Detectors shall not require resetting or readjustment after actuation to restore them to normal operation.



6. Integral Visual-Indicating Light: LED type. Indicating detector has operated and power-on status. Provide remote status and alarm indicator where indicated.
7. Remote Control: Unless otherwise indicated, detectors shall be analog-addressable type, individually monitored at the FACU for calibration, sensitivity, and alarm condition, and individually adjustable for sensitivity from the FACU.
8. Each sensor shall have multiple levels of detection sensitivity.
9. Sampling Tubes: Design and dimensions as recommended by manufacturer for the specific duct size, air velocity, and installation conditions where applied.
10. Relay Fan Shutdown: Rated to interrupt fan motor-control circuit.

## 2.6 HEAT DETECTORS

- A. General: UL 521 listed.
- B. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F (57 deg C).
  1. Mounting: Adapter plate for outlet box mounting. Plug-in base, interchangeable with smoke-detector bases.
  2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to the FACU.

## 2.7 NOTIFICATION APPLIANCES

- A. Description: Equipped for mounting as indicated and with screw terminals for system connections.
  1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly.
- B. Visible Alarm Devices: Xenon strobe lights listed under UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE is engraved in minimum 1-inch- (25-mm-) high letters on the lens.
  1. Rated Light Output: 15 – 110 candela.
  2. Strobe Leads: Factory connected to screw terminals.
- C. Voice/Tone Speakers:
  1. UL 1480 listed.
  2. High-Range Units: Rated 2 to 15 W.
  3. Low-Range Units: Rated 1 to 2 W.
  4. Mounting: Flush, semirecessed, or surface mounted; bidirectional as indicated.
  5. Matching Transformers: Tap range matched to the acoustical environment of the speaker location.
- D. Electrically Operated Alarm Bell:
  1. Manufacturers: Subject to compliance with requirements, provide products that are UL Listed or FM Approved for fire protection service.
  2. Standard: UL 464.
  3. Type: Vibrating, metal alarm bell.
  4. Size: 10-inch (250-mm)] diameter.

5. Finish: Red-enamel factory finish, suitable for outdoor use.

Connect to fire alarm system such that alarm bell operates when any fire sprinkler system flow switch activates.

## 2.8 REMOTE ANNUNCIATOR

- A. Description: Duplicate annunciator functions of the FACU for alarm, supervisory, and trouble indications. Also duplicate manual switching functions of the FACU, including acknowledging, silencing, resetting, and testing.
1. Mounting: Recessed cabinet, NEMA 250, Class 1.
- B. Display Type and Functional Performance: Alphanumeric display same as the FACU. Controls with associated LEDs permit acknowledging, silencing, resetting, and testing functions for alarm, supervisory, and trouble signals identical to those in the FACU. Provide audible signal for alarm function only. Supervisory and trouble signals shall be display function only.

## 2.9 ADDRESSABLE INTERFACE DEVICE

- A. Description: Microelectronic monitor module listed for use in providing a system address for listed alarm-initiating devices for wired applications with normally open contacts.
- B. Integral Relay: Capable of providing a direct signal for functions that may include but not be limited to:
1. Elevator controller to initiate elevator recall.

## 2.10 DIGITAL ALARM COMMUNICATOR TRANSMITTER

- A. Listed and labeled according to UL 632.
- B. Functional Performance: Built-in unit receives an alarm, supervisory, or trouble signal from the FACU, and automatically captures one or two telephone lines and dials a preset number for a remote central station and provides contact identification. When contact is made with the central station(s), the signal is transmitted. The unit supervises up to two telephone lines. Where supervising 2 lines, if service on either line is interrupted for longer than 45 seconds, the unit initiates a local trouble signal and transmits a signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. When telephone service is restored, unit automatically reports that event to the central station. If service is lost on both telephone lines, the local trouble signal is initiated.
- C. Secondary Power: Integral rechargeable battery and automatic charger. Battery capacity is adequate to comply with NFPA 72 requirements.
- D. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.

## 2.11 REMOTE TERMINAL UNIT (RTU)

## A. General Description:

1. The RTU, manufactured by ATI Systems, Inc., and UL listed for intended service, along with the associated antenna, is to be provided, installed, inspected and testing by the fire alarm installation contractor.
2. The RTU programming will be performed by the USC Police/Security Department, and is not part of this scope of work.
3. The interface method and pathway between the FACU and the ATI RTU is the responsibility of the fire alarm installation contractor.
4. Local and remote silent testing.

B. Functional Performance: The RTU shall interface to the FACU and transmit status information to the ATI system. The RTU can broadcast alert tones, pre-recorded and live voice messages through the FACU speakers. Signage and requirements to conform to NFPA 72, Chapter 24, shall be provided by the fire alarm contractor.

C. Primary Power: 120-VAC normal and emergency power shall be provided by the owner. Refer to electrical Division.

D. Secondary Power: A minimum of two (2) 12VDC, 30-Amp-Hour batteries and 20-hours of standby power shall be provided with the ATI RTU.

E. Surge Protection: A minimum of one (1) antenna surge protection device shall be provided by the owner.

## 2.12 GUARDS FOR PHYSICAL PROTECTION

A. Description: Welded wire mesh of size and shape for the manual station, smoke detector, gong, or other device requiring protection.

1. Factory fabricated and furnished by manufacturer of the device.
2. Finish: Paint of color to match the protected device.

## 2.13 WIRE AND CABLE

A. Wire and cable for fire alarm systems shall be UL listed and labeled as complying with NFPA 70, Article 760. Refer to Divisions 16010, 16071, 16110 and 16120 for additional information and requirements.

B. Signaling Line Circuits: Twisted, shielded or unshielded pair, not less than No. 16 AWG.  
1.

## PART 3 - EXECUTION

## 3.1 EQUIPMENT INSTALLATION

A. Existing system and equipment shall not be removed from service or demolished until the

new system and equipment has been inspected, tested and accepted.

- B. Smoke or Heat Detector Spacing:
  - 1. Smooth ceiling spacing shall not exceed **30 feet (9 m)** and/or the rating of the detector.
  - 2. Spacing of heat detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas, shall be determined according to Appendix A in NFPA 72.
  - 3. Spacing of heat detectors shall be determined based on guidelines and recommendations in NFPA 72.
- C. HVAC: Locate detectors not closer than **3 feet (1 m)** from air-supply diffuser or return-air opening.
- D. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of the duct.
- E. Heat Detectors in Elevator Machine Rooms: Coordinate temperature rating and location with smoke detector rating and location.
- F. Remote Status and Alarm Indicators: Install below ceiling or on the wall near each smoke detector that is not readily visible from normal viewing position.
- G. Audible Alarm-Indicating Devices: Install not less than 6 inches (150 mm) below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.
- H. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches (150 mm) below the ceiling.
- I. Device Location-Indicating Lights: Locate in public space near the device they monitor.
- J. FACU: Existing to remain.
- K. Annunciator: Install with top of panel not more than 72 inches (1830 mm) above the finished floor.
- L. Contractor shall provide dedicated 120VAC, 20 Amps, for each of the following fire alarm components. Contractor shall coordinate locations of the nearest power panels and the required circuit layout at the site with the building owner.
  - 1. Existing FACU.
  - 2. New RTU.
  - 3. New FAA.
  - 4. Amplifier equipment, whether banked or distributed throughout the building.
- M. All wiring and conduit penetrating fire resistance rated ceiling, floor or wall assemblies shall be provided with a UL listed fire stopping method applicable to the assembly type and rated to meet or exceed the rating of the assembly.

### 3.2 WIRING INSTALLATION

- A. Install wiring according to the following:
  - 1. NECA 1.
  - 2. TIA/EIA 568-A.
- B. Wiring Method: Install wiring in metal raceway according to Division 16 Section "Raceways and Boxes."
  - 1. Fire alarm circuits and equipment control wiring associated with the fire alarm system shall be installed in a dedicated raceway system. This system shall not be used for any other wire or cable.
- C. Wiring Method:
  - 1. Cables and raceways used for fire alarm circuits, and equipment control wiring associated with the fire alarm system, may not contain any other wire or cable.
  - 2. Fire-Rated Cables: Use of 2-hour fire-rated fire alarm cables, NFPA 70 Types MI and CI, is permitted.
  - 3. Signaling Line Circuits: Power-limited fire alarm cables shall not be installed in the same cable or raceway as signaling line circuits.
- D. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.
- E. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.
- F. Color-Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and a different color-code for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire alarm system junction boxes and covers red.
- G. Risers: Install at least two vertical cable risers to serve the fire alarm system. Separate risers in close proximity to each other with a minimum 1-hour-rated wall, so the loss of one riser does not prevent the receipt or transmission of signals from other floors or zones.
- H. Wiring to Remote Alarm Transmitting Device: **1-inch (25-mm)** conduit between the FACU and the transmitter. Install number of conductors and electrical supervision for connecting wiring as needed to suit monitoring function.

### 3.3 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals according to Division 16

Section "Basic Electrical Materials and Methods, Electrical Identification."

- B. Install instructions frame in a location visible from the FACU.
- C. Paint power-supply disconnect switch red and label "FIRE ALARM."

3.4 GROUNDING

- A. Ground the FACU and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to the FACU.

3.5 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.
- B. Perform the following field tests and inspections and prepare test reports:
  - 1. Before requesting final approval of the installation, submit a written statement using the form for Record of Completion shown in NFPA 72.
  - 2. Perform each electrical test and visual and mechanical inspection listed in NFPA 72. Certify compliance with test parameters. All tests shall be conducted under the direct supervision of a NICET Certified Level III Fire Alarm Technician.
    - a. Include the existing system in tests and inspections where necessary.
  - 3. Visual Inspection: Conduct a visual inspection before any testing. Use as-built drawings and system documentation for the inspection. Identify improperly located, damaged, or nonfunctional equipment, and correct before beginning tests.
  - 4. Testing: Follow procedure and record results complying with requirements in NFPA 72.
    - a. Detectors that are outside their marked sensitivity range shall be replaced.
  - 5. Test and Inspection Records: Prepare according to NFPA 72, including demonstration of sequences of operation by using the matrix-style form in Appendix A in NFPA 70.

3.6 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project outside normal occupancy hours for this purpose.
- B. Follow-Up Tests and Inspections: After date of Substantial Completion, test the fire alarm system complying with testing and visual inspection requirements in NFPA 72. Perform tests and inspections listed for three monthly, and one quarterly, periods.
- C. Semiannual Test and Inspection: Six months after date of Substantial Completion, test the fire alarm system complying with the testing and visual inspection requirements in NFPA 72. Perform tests and inspections listed for monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.

- D. Annual Test and Inspection: One year after date of Substantial Completion, test the fire alarm system complying with the testing and visual inspection requirements in NFPA 72. Perform tests and inspections listed for monthly, quarterly, semiannual, and annual periods. Use forms developed for initial tests and inspections.

3.7 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain the fire alarm system, appliances, and devices.
- B. END OF SECTION

APPENDIX A:  
ASBESTOS REPORT





107 Haddon Avenue, Westmont, New Jersey 08108

1-800-220-3675

http://www.emsl.com

4745

EMSL ANALYTICAL, Inc.

## CHAIN OF CUSTODY

EMSL Rep:

Un. of South Carolina

Your Name:

Company:

EMSL-Bill to:

Third Party Billing requires written authorization from third party

Street:

Street:

Box #:

Box #:

City/State:

City/State:

Zip

Zip

Phone Results to:

Fax Results to:

Name:

Name:

Telephone #:

Fax #:

Project Name/Number:

Purchase Order #:

Humanities Class Room  
# 55

<input type="checkbox"/> 3 Hours	<input type="checkbox"/> 6 Hours	<input type="checkbox"/> 12 Hours	<input checked="" type="checkbox"/> 24 Hours	<input type="checkbox"/> 48 Hours	<input type="checkbox"/> 72 Hours	<input type="checkbox"/> 4 Days	<input type="checkbox"/> 5 Days	<input type="checkbox"/> 6-10 Days
TURNAROUND TIME								
<input type="checkbox"/> Air	<input checked="" type="checkbox"/> Bulk	<input type="checkbox"/> Soil	<input type="checkbox"/> Wipe	<input type="checkbox"/> Micro-Vac	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> Wastewater	<input type="checkbox"/> Chips	<input type="checkbox"/> Other
SAMPLE MATRIX								

## ASBESTOS ANALYSIS

## PCM - Air

- ☐ NIOSH 7400 (A) Issue 2: August 1994  
☐ OSHA 901WA

## TEM AIR

- ☐ AHERA 40 CFR, Part 763 Subpart E  
☐ NIOSH 7403 Issue 2  
☐ EPA Level II

## PLM - Bulk

- ☒ EPA 800/R-92/116  
☐ NY Stratified Point Count  
☐ California Air Resource Board (CARB) 425  
☐ NIOSH 9002  
☐ PLM NOB (Gravimetric) NYS 198.1  
☐ EPA Point Count (400 Points)  
☐ EPA Point Count (1,000 Points)  
☐ Standard Addition Point Count

## SOILS

- ☐ EPA Protocol Quantitative  
☐ EPA Protocol Quantitative  
☐ EMSL MSD 9009 Method fibers/gram  
☐ Superfund EPA 340-R097-028 (dust generation)

## TEM BULK

- ☐ Drop Mount (Qualitative)  
☐ Chatfield SOP-1988-02  
☐ TEM NOB (Gravimetric) NYS 198.1

## TEM MICROVAC

- ☐ ASTM D 2755-95 (Qualitative)

## TEM WIPE

- ☐ ASTM D-4280-99

## TEM WATER

- ☐ EPA 100.1

- ☐ EPA 100.2

- ☐ NYS 198.2

OTHER:

## LEAD ANALYSIS

## Flame Atomic Absorption

- ☐ Wipe, SW846-7420 ☐ ASTM ☐ non ASTM  
☐ Soil, SW846-7420  
☐ Air, NIOSH 7082  
☐ Chips, SW846-7420 or AOAC 5.009 (974.02)  
☐ Wastewater, SW 846-7420  
☐ TCLP LEAD SW846-1311/7420

## Graphite Furnace Atomic Absorption

- ☐ Air, NIOSH 7105  
☐ Wastewater, SW846-7421  
☐ Soil, SW846-7421  
☐ Drinking Water, EPA 339.2

## ICP - Inductively Coupled Plasma

- ☐ Wipe, SW846-6010 ☐ ASTM ☐ non ASTM  
☐ Soil, SW846-6010  
☐ Air, NIOSH 7300

## MATERIALS ANALYSIS

- ☐ Full Particle Identification  
☐ Optical Particle Identification  
☐ Dust Mines and Insect Fragments  
☐ Particle Size & Distribution  
☐ Product Comparison  
☐ Paint Characterization  
☐ Failure Analysis  
☐ Corrosion Analysis  
☐ Glove Box Containment Study  
☐ Petrographic Examination of Concrete  
☐ Portland Cement in Workplace Atmospheres (OSHA ID-143)  
☐ Man Made Vitreous Fibers - MMVF's  
☐ Synthetic Fiber Identification  
☐ Other:

## MICROBIAL ANALYSIS

## Air Samples

- ☐ Mold & Fungi by Air O Cell  
☐ Mold & Fungi by Agar Plate count & id  
☐ Bacterial Count and Gram Stain  
☐ Bacterial Count and Identification

## Water Samples

- ☐ Total Coliforms, Fecal Coliforms  
☐ Escherichia Coli, Fecal Streptococci  
☐ Legionella  
☐ Salmonella  
☐ Giardia and Cryptosporidium

## Wipe and Bulk Samples

- ☐ Mold & Fungi - Direct Examination  
☐ Mold & Fungi - (Culture follow up to direct examination if necessary)  
☐ Mold & Fungi - Culture (Count & id)  
☐ Mold & Fungi - Culture (Count only)  
☐ Bacterial Count & Gram Stain  
☐ Bacterial Count & Identification (3 most prominent types)  
☐ Other:

## IAQ ANALYSIS

- ☐ Nuisance Dust (NIOSH 0500 & 0600)  
☐ Airborne Dust (PM10, TSP)  
☐ Silica Analysis by XRD ☐ NIOSH 7500  
☐ HVAC Efficiency  
☐ Carbon Black  
☐ Airborne Oil Mist  
☐ Other:

Client Sample # (S)

Relinquished:

Received:

Relinquished:

Received:

Date:

Date:

Date:

TOTAL SAMPLE # 17

Time:

Time:

Time:

Time:

Page 1 of 2

NS

8/17

10:00

Reset Form

Print Form

4745

1-92

UNIVERSITY OF  
SOUTH  
CAROLINA

Hennrich Classroom

#55

Building # CLASSROOM BUI

Sample Analysis

8-13-2009

Turn Around Time 24hr

Type of Analysis: Lead / Asbestos Date

Area	Sample ID	Material Sampled	Material Location	F/NF	Cond	Quantity	Pot to Disturb
	#1	JOINT COMPOUND	ROOM 405	F	good	15 SQ.FT	low
	#2	SHEET ROCK	ROOM 405	F	good	240 SQ.FT	low
	3	JOINT COMPOUND	ROOM 412	F	good	15 SQ.FT	LOW
	4	SHEET ROCK	ROOM 412	F	good	175 SQ.FT	LOW
	5	2X2 CEILING TILE	4TH AT 401	F	good	1800SQ.FT	LOW
	6	JOINT COMPOUND	ROOM 317	F	good	15 SQ.FT	LOW
	7	SHEET ROCK	ROOM 317	F	good	340 SQ.FT	LOW
	8	JOINT COMPOUND	ROOM 303	F	good	15 SQ.FT	LOW
	9	SHEET ROCK	ROOM 303	F	good	350 SQ.FT	LOW
	10	2X2 CEILING TILE	AT ROOM 318	F	good	1850 SQ.FT	LOW

License # 00568

FM#

Signature

Requestor JEFF TAYLOR

Send lab results in PDF format as soon as possible to:

Ed Pitts 803-777-3296

720 College St.

Columbia, SC 29208

EHP@fmc.sc.edu

Fax # 803-777-3990

Ty Russell 803-777-1208

720 College St.

Columbia, SC 29208

NTRussell@fmc.sc.edu

Reset Form

Print Form



4745  
2 of 2  
#55 Humanite classroom

Building # ~~SAWPERHALL~~

Sample Analysis

Type of Analysis: Lead / Asbestos

Date: 8-13-2009

Turn Around Time 24HRS

Area	Sample ID	Material Sampled	Material Location	F/NF	Cond	Quantity	Pot to Disturb
	11	JOINT COMPOUND	ROOM 202	F	GOOD	15 SQ.FT	LOW
	12	SHEET ROCK	ROOM 202	F	GOOD	240 SQ.FT	LOW
	13	JOINT COMPOUND	ROOM 215	F	GOOD	15 SQ.FT	LOW
	14	SHEET ROCK	ROOM 215	F	GOOD	275 SQ.FT	LOW
	15	2X2 CEILING TILE	AT ELAVATOR	F	GOOD	1850 SQ.FT	LOW
	16	JOINT COMPOUND	ROOM 014	F	GOOD	15 SQ.DT	LOW
	17	SHEET ROCK	SEMINAR ROOM 2	F	GOOD	260 SQ.FT	LOW

License # 00568

FM#

Send lab results in PDF format as soon as possible to:

Ed Pitts 803-777-3296  
720 College St  
Columbia, SC 29208  
EHP@fmc.sc.edu

Fax # 803-777-3990

Signature

Requestor JEFF TAYLOR

Ty Russell 803-777-1208  
720 College St  
Columbia, SC 29208  
NTRussell@fmc.sc.edu

**EMSL Analytical, Inc.**

705 Gralin Street, Kenersville, NC 27204

Phone: (336) 992-1026 Fax: (336) 992-4175 Email: [pross@kernersville.com](mailto:pross@kernersville.com)

Attn: **Ed Pitts**  
**University of South Carolina**  
**743 Greene Street**  
**Columbia, SC 29208**

Fax: (803) 777-7334 Phone: (803) 777-3296  
Project: **#55 Humanities Class Room**

Customer ID: UNSC62  
Customer PO:  
Received: 08/17/09 10:00 AM  
EMSL Order: 020904745  
EMSL Proj:  
Analysis Date: 8/18/2009

### Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
1 020904745-0001	Joint Compound	Gray/Beige Non-Fibrous Heterogeneous	1% Cellulose	97% Non-fibrous (other)	2% Chrysotile
2 020904745-0002	Sheet Rock	Gray/Tan Fibrous Heterogeneous	5% Cellulose 1% Glass	94% Non-fibrous (other)	None Detected
3 020904745-0003	Joint Compound	Gray/Beige Non-Fibrous Heterogeneous	1% Cellulose	97% Non-fibrous (other)	2% Chrysotile
4 020904745-0004	Sheet Rock	Gray/Tan Fibrous Heterogeneous	5% Cellulose 1% Glass	94% Non-fibrous (other)	None Detected
5 020904745-0005	Ceiling Tile	Gray/Tan Fibrous Heterogeneous	45% Cellulose 15% Glass	40% Non-fibrous (other)	None Detected
6 020904745-0006	Joint Compound	Gray Non-Fibrous Heterogeneous	1% Cellulose	97% Non-fibrous (other)	2% Chrysotile
7 020904745-0007	Sheet Rock	Gray/Tan/Beige Fibrous Heterogeneous	30% Cellulose 1% Glass	69% Non-fibrous (other)	None Detected

Analyst(s)

Scott Combs (17)

Stephen Bennett, Laboratory Manager  
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. The limit of detection as stated in the method is 1%. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

Samples analyzed by EMSL Analytical, Inc. Kenersville 705 Gralin Street, Kenersville NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

**EMSL Analytical, Inc.**

706 Gralin Street, Kernersville, NC 27284

Phone: (336) 992-1025 Fax: (336) 992-4176 Email: [greenborolab@emsl.com](mailto:greenborolab@emsl.com)

Attn: **Ed Pitts**  
**University of South Carolina**  
**743 Greene Street**  
**Columbia, SC 29208**

Fax: (803) 777-7334 Phone: (803) 777-3296  
Project: **#55 Humanities Class Room**

Customer ID: UNSC62  
Customer PO:  
Received: 08/17/09 10:00 AM  
EMSL Order: 020904745  
EMSL Proj:  
Analysis Date: 8/18/2009

### Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
8 020904745-0008	Joint Compound	Gray Non-Fibrous Heterogeneous	1% Cellulose	96% Non-fibrous (other)	3% Chrysotile
9 020904745-0009	Sheet Rock	Brown/Gray Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (other)	None Detected
10 020904745-0010	Ceiling Tile	Gray/Tan/White Fibrous Heterogeneous	45% Cellulose 20% Min. Wool	35% Non-fibrous (other)	None Detected
11 020904745-0011	Joint Compound	Gray Non-Fibrous Heterogeneous	1% Cellulose	96% Non-fibrous (other)	3% Chrysotile
12 020904745-0012	Sheet Rock	Gray/Tan Fibrous Heterogeneous	15% Cellulose 1% Glass	84% Non-fibrous (other)	None Detected
13 020904745-0013	Joint Compound	Gray Non-Fibrous Heterogeneous	1% Cellulose	96% Non-fibrous (other)	3% Chrysotile
14 020904745-0014	Sheet Rock	Gray Non-Fibrous Heterogeneous	1% Cellulose 1% Glass	98% Non-fibrous (other)	None Detected

Analyst(s)

Scott Combs (17)

Stephen Bennett, Laboratory Manager  
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. The limit of detection as stated in the method is 1%. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

Samples analyzed by EMSL Analytical, Inc. Kernersville 706 Gralin Street, Kernersville NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

**EMSL Analytical, Inc.**

706 Gralin Street, Kenersville, NC 27264

Phone: (336) 892-1025 Fax: (336) 892-4175 Email: [greensboro@emsl.com](mailto:greensboro@emsl.com)

Attn: **Ed Pitts**  
**University of South Carolina**  
**743 Greene Street**  
**Columbia, SC 29208**

Fax: (803) 777-7334 Phone: (803) 777-3296  
Project: **#55 Humanities Class Room**

Customer ID: UNSC62  
Customer PO:  
Received: 08/17/09 10:00 AM  
EMSL Order: 020904745  
EMSL Proj:  
Analysis Date: 8/18/2009

### Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
15 020904745-0015	Ceiling Tile	Gray/Tan Fibrous Heterogeneous	45% Cellulose 20% Min. Wool	35% Non-fibrous (other)	None Detected
16 020904745-0016	Joint Compound	White/Yellow/Beige Non-Fibrous Heterogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
17 020904745-0017	Sheet Rock	Gray Non-Fibrous Heterogeneous	2% Cellulose 1% Glass	97% Non-fibrous (other)	None Detected

Analyst(s)

Scott Combs (17)

Stephen Bennett, Laboratory Manager  
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. The limit of detection as stated in the method is 1%. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

Samples analyzed by EMSL Analytical, Inc. Kenersville 706 Gralin Street, Kenersville NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321



**EMBL ANALYTICAL, INC.**  
LABORATORY EQUIPMENT DIVISION

## Asbestos Chain of Custody

**EMSL Order Number (Lab Use Only):**

**EMSL ANALYTICAL, INC.**  
706 GRALIN ST.  
KERNERSVILLE, NC 27284  
PHONE: (336) 992-1025  
FAX: (336) 992-4175

Company: University of South Carolina		EMSL-Bill to: <input type="checkbox"/> Same <input checked="" type="checkbox"/> Different If Bill to is Different note Instructions in Comments**	
Street: 743 Green St.		Third Party Billing requires written authorization from third party	
City: Columbia	State/Province: SC	Zip/Postal Code:	Country:
Report To (Name): Ed Pitts Darryl Washington		Fax #:	
Telephone #: 803 977-0572 803 977-0291		Email Address:	
Project Name/Number: H Humanities Office			
Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email		Purchase Order:	U.S. State Samples Taken:
Turnaround Time (TAT) Options* - Please Check			
<input type="checkbox"/> 3 Hour <input type="checkbox"/> 6 Hour <input type="checkbox"/> 24 Hour <input checked="" type="checkbox"/> 48 Hour <input type="checkbox"/> 72 Hour <input type="checkbox"/> 96 Hour <input type="checkbox"/> 1 Week <input type="checkbox"/> 2 Weeks			
*For TEM Air 3 hours/6 hours, please call ahead to schedule. *There is a premium charge for 3 Hr TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.			
<b>PCM-Air</b> <input type="checkbox"/> NIOSH 7400 <input type="checkbox"/> w/ OSHA 8hr. TWA		<b>TEM-Air</b> <input type="checkbox"/> 4-4.5hr TAT (AHERA & only) <input type="checkbox"/> AHERA 40 CFR, Part 763 <input type="checkbox"/> NIOSH 7402 <input type="checkbox"/> EPA Level II <input type="checkbox"/> ISO 10312	
<b>PLM-Bulk (reporting limit)</b> <input checked="" type="checkbox"/> PLM EPA 600/R-93/11B (<1%) <input type="checkbox"/> PLM EPA NOB (<1%) Point Count: <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) Point Count w/Gravimetric: <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) <input type="checkbox"/> NYS 198.1 (friable in NY) <input type="checkbox"/> NYS 198.6 NOB (non-friable-NY) <input type="checkbox"/> NIOSH 9002 (<1%)		<b>TEM-Bulk</b> <input type="checkbox"/> TEM EPA NOB <input type="checkbox"/> NYS NOB 198.4 (non-friable-NY) <input type="checkbox"/> Chatfield SOP <input type="checkbox"/> TEM Mass Analysis-EPA 600 sec. 2.5 <b>TEM-Water: EPA 100.2</b> Fibers >10µm <input type="checkbox"/> Waste <input type="checkbox"/> Drinking All Fiber Sizes <input type="checkbox"/> Waste <input type="checkbox"/> Drinking	
		<b>TEM-Dust:</b> <input type="checkbox"/> Microvac - ASTM D 5755 <input type="checkbox"/> Wipe - ASTM D6480 <input type="checkbox"/> Carpet Sonication (EPA 600/J-93/167) <b>Soil/Rock/Vermiculite</b> <input type="checkbox"/> PLM CARB 435 - A (0.25% sensitivity) <input type="checkbox"/> PLM CARB 435 - B (0.1% sensitivity) <input type="checkbox"/> TEM CARB 435 - B (0.1% sensitivity) <input type="checkbox"/> TEM CARB 435 - C (0.01% sensitivity) <input type="checkbox"/> EPA Protocol (Semi-Quantitative) <input type="checkbox"/> EPA Protocol (Quantitative) <b>Other:</b> <input type="checkbox"/>	
<input type="checkbox"/> Check For Positive Stop - Clearly Identify Homogenous Group			
Samplers Name:		Samplers Signature:	
Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
Client Sample # (s):	Total # of Samples:	Date: 10/10/12	
Relinquished (Client):	Date:	Time:	Time: 10:15
Received Lab: [Signature]			
Comments/Special Instructions:			

Print Form

Reset Form

6259



*Stop positive  
please*

Building # HUMANITIES OFFICE BLD

Sample Analysis

07-11-2012

Type of Analysis: Lead / Asbestos Date: 07-11-2012

48 hrs

Turn Around Time

Area	Sample ID	Material Sampled	Material Location	F/NF	Cond	Quantity	Pot to Disturb
A	1	SHEET ROCK	1st FLOOR HALL @ MAIL BOXES	F	G	>5000 SQ FT	LOW
A	2	SHEET ROCK	RM 215	F	G	>5000 SQ FT	LOW
A	3	SHEET ROCK	RM 722	F	G	>5000 SQ FT	LOW
A	4	SHEET ROCK	RM 613	F	G	>5000 SQ FT	LOW
A	5	SHEET ROCK	RM 408	F	G	>5000 SQ FT	LOW
A	6	SHEET ROCK	RM 316	F	G	>5000 SQ FT	LOW
A	7	SHEET ROCK	RM 501	F	G	>5000 SQ FT	LOW
B	8	2X2 WHITE CEILING TILE	7TH FLOOR HALLWAY	F	G	>5000 SQ FT	LOW
B	9	2X2 WHITE CEILING TILE	2ND FLOOR HALLWAY	F	G	>5000 SQ FT	LOW
B	10	2X2 WHITE CEILING TILE	3RD FLOOR HALLWAY	F	G	>5000 SQ FT	LOW

License # ASBI-00568

FM# FM00398233

Signature

Requestor TY RUSSELL

Send lab results in PDF format as soon as possible to:

Ed Pitts 803-777-3296  
720 College St.  
Columbia, SC 29208  
EHP@fmc.sc.edu

Darryl Washington 803-777-2399  
720 College St.  
Columbia, SC 29208  
WashingtonD@fmc.sc.edu

Ty Russell 803-777-1208  
720 College St.  
Columbia, SC 29208  
NTRussell@fmc.sc.edu

Fax # 803-777-3990



Print Form

Reset Form

6259



## Sample Analysis

Type of Analysis: Lead / Asbestos Date: Building # Turn Around Time 

Area	Sample ID	Material Sampled	Material Location	F/NF	Cond	Quantity	Pot to Disturb
C	11	JOINT COMPOUND	RM 501	F	G	>5000 SQ FT	LOW
C	12	JOINT COMPOUND	RM 905	F	G	>5000 SQ FT	LOW
C	13	JOINT COMPOUND	RM 613	F	G	>5000 SQ FT	LOW
C	14	JOINT COMPOUND	RM 215	F	G	>5000 SQ FT	LOW
C	15	JOINT COMPOUND	RM 722	F	G	>5000 SQ FT	LOW
C	16	JOINT COMPOUND	RM 316	F	G	>5000 SQ FT	LOW
C	17	JOINT COMPOUND	RM 408	F	G	>5000 SQ FT	LOW
D	18	2x3 fiberglass ceiling tile	RM 215	F	G	>5000 SQ FT	LOW
D	19	2x3 fiberglass ceiling tile	RM 316	F	G	>5000 SQ FT	LOW
D	20	2x3 fiberglass ceiling tile	RM 622	F	G	>5000 SQ FT	LOW

License # FM# Signature Requestor 

Send lab results in PDF format as soon as possible to:

Ed Pitts 803-777-3296  
720 College St.  
Columbia, SC 29208  
EHP@unc.sc.edu

Darryl Washington 803-777-2399  
720 College St.  
Columbia, SC 29208  
WashingtonD@unc.sc.edu

Ty Russell 803-777-1208  
720 College St.  
Columbia, SC 29208  
NTRussell@unc.sc.edu

Fax # 803-777-3990

Print Form

Reset Form



Sample Analysis

Type of Analysis: Lead / Asbestos Date: 

Building #

Turn Around Time

Area	Sample ID	Material Sampled	Material Location	F/NF	Cond	Quantity	Pot to Disturb
E	21	POPCORN TEXTURED CEILING	ELEVATOR ENTRY FOYER HALL 5TH FLOOR	F	G	<5000 SQ FT	LOW
E	22	POPCORN TEXTURED CEILING	ELEVATOR ENTRY FOYER HALL 3RD FLOOR	F	G	<5000 SQ FT	LOW
E	23	POPCORN TEXTURED CEILING	ELEVATOR ENTRY FOYER HALL 1ST FLOOR	F	G	<5000 SQ FT	LOW
E	24	POPCORN TEXTURED CEILING	ELEVATOR ENTRY FOYER HALL 1ST FLOOR	F	G	<5000 SQ FT	LOW
E	25	POPCORN TEXTURED CEILING	ELEVATOR ENTRY FOYER HALL 6TH FLOOR	F	G	<5000 SQ FT	LOW
E	26	POPCORN TEXTURED CEILING	ELEVATOR ENTRY FOYER HALL 9TH FLOOR	F	G	<5000 SQ FT	LOW
E	27	POPCORN TEXTURED CEILING	ELEVATOR ENTRY FOYER HALL 2ND FLOOR	F	G	<5000 SQ FT	LOW
E	28	POPCORN TEXTURED CEILING	ELEVATOR ENTRY FOYER HALL 4TH FLOOR	F	G	<5000 SQ FT	LOW
F	29	BLK MASTIC	ON HVAC DUCTS AND FIBERGLASS LINES	NF	G	<1CB FT	LOW
			# 29 IS A REFERENCE SAMPLE ONLY				

License #

FM#

Signature

Requestor

Send lab results in PDF format as soon as possible to:

Ed Pitts 803-777-3296

720 College St.

Columbia, SC 29208

EHP@fmc.sc.edu

Darryl Washington 803-777-2399

720 College St.

Columbia, SC 29208

Washington@fmc.sc.edu

Ty Russell 803-777-1208

720 College St.

Columbia, SC 29208

NTRussell@fmc.sc.edu

Fax # 803-777-3990

**EMSL Analytical, Inc.**

706 Galin Street, Kernersville, NC 27284

Phone/Fax (336) 992-1025 / (336) 992-4175

[greensborolab@emsl.com](mailto:greensborolab@emsl.com)

EMSL Order: 021206259

CustomerID: UNSC62

CustomerPO:

ProjectID:

Attn: **Ed Pitts**  
**University of South Carolina**  
**743 Greene Street**  
**Columbia, SC 29208**

Phone: (803) 777-7000  
Fax: (803) 777-7334  
Received: 10/10/12 10:15 AM  
Analysis Date: 10/11/2012  
Collected:

Project: Humanities Office Bldg

**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
1 021206259-0001	Sheet Rock	Gray/Tan Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
2 021206259-0002	Sheet Rock	Gray/Tan Fibrous Heterogeneous	5% Cellulose	95% Non-fibrous (other)	None Detected
3 021206259-0003	Sheet Rock	Gray/Tan Fibrous Heterogeneous	5% Cellulose 1% Glass	94% Non-fibrous (other)	None Detected
4 021206259-0004	Sheet Rock	Gray/Tan Fibrous Heterogeneous	5% Cellulose	95% Non-fibrous (other)	None Detected
5 021206259-0005	Sheet Rock	Gray/Tan Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
6 021206259-0006	Sheet Rock	Gray/Tan Fibrous Heterogeneous	8% Cellulose 1% Glass	91% Non-fibrous (other)	None Detected
7 021206259-0007	Sheet Rock	Brown/Gray Fibrous Heterogeneous	5% Cellulose 1% Glass	94% Non-fibrous (other)	None Detected
8 021206259-0008	Ceiling Tile	Gray/White Fibrous Heterogeneous	45% Cellulose 30% Min. Wool	25% Non-fibrous (other)	None Detected

## Analyst(s)

Nicole Shutts (3)

Scott Combs (13)

Stephen Bennett, Laboratory Manager  
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%  
Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

Initial report from 10/11/2012 17:51:19

**EMSL Analytical, Inc.**

706 Grallin Street, Kenersville, NC 27284

Phone/Fax: (336) 992-1025 / (336) 992-4175

greensborolab@emsl.com

EMSL Order: 021206259

CustomerID: UNSC62

CustomerPO:

ProjectID:

Attn: **Ed Pitts**  
**University of South Carolina**  
**743 Greene Street**  
**Columbia, SC 29208**

Phone: (803) 777-7000  
Fax: (803) 777-7334  
Received: 10/10/12 10:15 AM  
Analysis Date: 10/11/2012  
Collected:

Project: **Humanities Office Bldg**

**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
9 021206259-0009	Ceiling Tile	Gray/White Fibrous Heterogeneous	45% Cellulose 30% Min. Wool	25% Non-fibrous (other)	None Detected
10 021206259-0010	Ceiling Tile	Tan/White Fibrous Heterogeneous	45% Cellulose 30% Min. Wool	25% Non-fibrous (other)	None Detected
11 021206259-0011	Joint Compound	Beige Non-Fibrous Heterogeneous	1% Cellulose	96% Non-fibrous (other)	3% Chrysotile
12 021206259-0012	Joint Compound				Stop Positive (Not Analyzed)
13 021206259-0013	Joint Compound				Stop Positive (Not Analyzed)
14 021206259-0014	Joint Compound				Stop Positive (Not Analyzed)
15 021206259-0015	Joint Compound				Stop Positive (Not Analyzed)
16 021206259-0016	Joint Compound				Stop Positive (Not Analyzed)

**Analyst(s)**

Nicole Shutts (3)

Scott Combs (13)

Stephen Bennett, Laboratory Manager  
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%  
Samples analyzed by EMSL Analytical, Inc. Kenersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

Initial report from 10/11/2012 17:51:19

**EMSL Analytical, Inc.**

706 Galin Street, Kenersville, NC 27284

Phone/Fax: (336) 992-1025 / (336) 992-4175

[greensborolab@emsl.com](mailto:greensborolab@emsl.com)

EMSL Order: 021206259

CustomerID: UNSC62

CustomerPO:

ProjectID:

Attn: **Ed Pitts**  
**University of South Carolina**  
**743 Greene Street**  
**Columbia, SC 29208**

Phone: (803) 777-7000  
Fax: (803) 777-7334  
Received: 10/10/12 10:15 AM  
Analysis Date: 10/11/2012  
Collected:

Project: Humanities Office Bldg

**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos	
			% Fibrous	% Non-Fibrous	% Type	
17 021206259-0017	Joint Compound					Stop Positive (Not Analyzed)
18 021206259-0018	Fiberglass Ceiling Tile	White/Yellow Fibrous Heterogeneous	95% Glass	5% Non-fibrous (other)		None Detected
19 021206259-0019	Fiberglass Ceiling Tile	White/Yellow Non-Fibrous Heterogeneous	95% Glass	5% Non-fibrous (other)		None Detected
20 021206259-0020	Fiberglass Ceiling Tile	White/Yellow Fibrous Heterogeneous	95% Glass	5% Non-fibrous (other)		None Detected
21 021206259-0021	Popcorn Ceiling Texture	Gray/White Non-Fibrous Heterogeneous	1% Cellulose	97% Non-fibrous (other)	2% Chrysotile	
22 021206259-0022	Popcorn Ceiling Texture					Stop Positive (Not Analyzed)
23 021206259-0023	Popcorn Ceiling Texture					Stop Positive (Not Analyzed)
24 021206259-0024	Popcorn Ceiling Texture					Stop Positive (Not Analyzed)

Analyst(s)

Nicole Shutts (3)  
Scott Combs (13)

Stephen Bennett, Laboratory Manager  
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%  
Samples analyzed by EMSL Analytical, Inc. Kenersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000226, West Virginia LT000321

Initial report from 10/11/2012 17:51:19

**EMSL Analytical, Inc.**

706 Grallin Street, Kenersville, NC 27284

Phone/Fax: (336) 992-1025 / (336) 992-4175

[greensborolab@emsl.com](mailto:greensborolab@emsl.com)

EMSL Order: 021206259

CustomerID: UNSC62

CustomerPO:

ProjectID:

Attn: **Ed Pitts**  
**University of South Carolina**  
**743 Greene Street**  
**Columbia, SC 29208**

Phone: (803) 777-7000  
Fax: (803) 777-7334  
Received: 10/10/12 10:15 AM  
Analysis Date: 10/11/2012  
Collected:

Project: Humanities Office Bldg

**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA  
600/M4-82-020 Method(s) using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
25 021206259-0025	Popcorn Ceiling Texture				Stop Positive (Not Analyzed)
26 021206259-0026	Popcorn Ceiling Texture				Stop Positive (Not Analyzed)
27 021206259-0027	Popcorn Ceiling Texture				Stop Positive (Not Analyzed)
28 021206259-0028	Popcorn Ceiling Texture				Stop Positive (Not Analyzed)
29 021206259-0029	Mastic	Black Fibrous Heterogeneous	2% Cellulose	88% Non-fibrous (other)	10% Chrysotile

## Analyst(s)

Nicole Shutts (3)

Scott Combs (13)

Stephen Bennett, Laboratory Manager  
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%  
Samples analyzed by EMSL Analytical, Inc. Kenersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

Initial report from 10/11/2012 17:51:19

**FM00324344****USC Work Order****Description** HAZMAT SURVEY-055

<b>Site</b> COLUMBIA	<b>Assigned To</b> JPROVENCE
<b>Building</b> 055 HUMANITIES CLASSROOM BUILDING	<b>Crew</b> HAZMAT
<b>Floor</b> Room:	<b>Start Date</b> Priority 3
<b>Equipment</b>	<b>Due date</b> 14-SEP-12
	<b>Request Date</b> 12-JAN-10 by KALLEY

<b>Request #</b> FM00324344	<b>Description</b> HAZMAT SURVEY-055
<b>Parent WO #</b>	

<b>CP Number</b> CP00285935	<b>HUMANITIES OFFICE/CLASSROOM FIRE ALARM UPGRADES</b>
-----------------------------	--

<b>State/Internal Project Number</b> H27-1851
---

<b>Requestor</b> FISHER,PETE	<b>Project Manager</b> FISHER, PETER L.
<b>Telephone</b> 7-9346	<b>Telephone</b> 777-9346
<b>Alternate</b>	<b>Estimated Cost</b> \$ 232.00
<b>Telephone</b>	<b>Billing</b> CHARGEBACK-EXT
<b>Non-Available Time</b>	53100-W384-57120 (COLUMBIA CAMPUS FIRE ALARM UPGRADES)

<b>Task List</b> (CHECK ALL THAT APPLY AND PROVIDE ADDITIONAL INFORMATION AS NEEDED)  HAZMAT SURVEY(S) REQUESTED FOR THE FOLLOWING <input type="checkbox"/> FLOOR TILE <input type="checkbox"/> JOINT COMPOUND <input type="checkbox"/> WALLS <input type="checkbox"/> MASTIC <input type="checkbox"/> CEILING TILE <input type="checkbox"/> PIPE INSULATION <input type="checkbox"/> VINYL SHEET FLOORING <input type="checkbox"/> FIREPROOFING <input type="checkbox"/> FUME HOODS/TABLE TOPS <input type="checkbox"/> ROOFING MATERIALS <input type="checkbox"/> FIRE DOORS <input type="checkbox"/> GASKETS/VALVES <input type="checkbox"/> BOILER INSULATION <input type="checkbox"/> ACOUSTICAL POPCORN CEILING <input type="checkbox"/> DUCT WORK <input type="checkbox"/> OTHER (PLEASE DESCRIBE BELOW)
--

<b>DATE WORK STARTED</b>	<b>CAUSE</b>
<b>DATE WORK COMPLETED</b>	<b>CONDITION</b>
<b>EQUIPMENT</b>	
<b>CLOSING REMARKS</b>	
<b>BENCHSTOCK MATERIALS</b>	
<b>Qty</b>	<b>Description</b>
	<b>Price Per Unit</b>

**Supervisor's Approval** \_\_\_\_\_

<b>Note Date</b>	<b>Title</b>
------------------	--------------

**24-OCT-12 HAZMAT SURVEY RESULTS - OFFICE BUILDING**

SURVEY DATE:10/24/12

INSPECTOR #: DARRYL WASHINGTON II BI-00568

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

SHEET ROCK- NEGATIVE FOR ASBESTOS CONTAINING MATERIALS

JOINT COMPOUND- POSITIVE FOR ASBESTOS CONTAINING MATERIALS

POPCORN TEXTURED SPRAY ( @ ELEVATORS )- POSITIVE FOR ASBESTOS CONTAINING MATERIALS

2X3 CEILING TILE ( FIBERGLASS BACKING )- NEGATIVE FOR ASBESTOS CONTAINING MATERIALS

2X4 CEILING TILE- NEGATIVE FOR ASBESTOS CONTAINING MATERIALS

**INSPECTORS NOTES**

NO SUSPECT MATERIALS ABOVE CEILING

THERE IS ASBESTOS BLACK MASTIC ON THE HVAC DUCTS IN THE ENTIRE BUILDING AS WELL AS ON WATER LINES ABOVE THE CEILING IN THE BUILDING

THE FLOOR TILE IN THE HALLS AND UNDER CARPET IN THE BUILDING (9X9) IS POSITIVE FOR ASBESTOS AS WELL AS THE BLACK MASTIC THAT HOLDS IT TO THE CONCRETE

THE ELEVATOR DOORS MAY OR MAY NOT HAVE ASBESTOS INSULATION IN ITS CORES. THEY SHOULD NOT BE REMOVED OR DISTURBED UNLESS TESTED BY INSPECTORS.

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

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

**24-OCT-12 HAZMAT SURVEY RESULTS - CLASS BUILDING**

SURVEY DATE:10/24/12

INSPECTOR #: DARRYL WASHINGTON II BI-00568

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

SHEET ROCK- NEGATIVE FOR ASBESTOS CONTAINING MATERIALS

JOINT COMPOUND- POSITIVE FOR ASBESTOS CONTAINING MATERIALS

CEILING TILE- NEGATIVE FOR ASBESTOS CONTAINING MATERIALS

THIS ASBESTOS SURVEY IS BEING RECERTIFIED PER DARRYL WASHINGTON II BI-00568. THERE HAS BEEN NO CHANGE IN MATERIAL, AND NO NEW MATERIAL BROUGHT INSIDE THIS BUILDING.

**INSPECTORS NOTES**

THERE IS ASBESTOS FLOOR TILE AND MASTIC ( 9X9 AND BLACK ) INSIDE EACH ROOMS BARE AND UNDER CARPET THAT SHOULD NOT BE DISTURBED.

NO SUSPECT MATERIALS ABOVE THE CEILING IN THE ENTIRE BUILDING. BARE CONCRETE DECKING

THE ELEVATOR DOORS IN PLACE MAY OR MAY NOT HAVE ASBESTOS INSULATION INSIDE THE CORES OF EACH DOOR. DO NOT DISTURB MATERIAL UNTIL FURTHER TESTING BY INSPECTORS

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

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

**02-APR-04 ASBESTOS MAY BE PRESENT IN THIS BUILDING**

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

AS OF 02/04/2004 THE FOLLOWING AREAS WITHIN THE BUILDING HAVE BEEN IDENTIFIED BY SURVEY TO CONTAIN ASBESTOS:

BLDG 055 HUMANITIES CLASSROOM

FOYER CEILING --&gt; SPRAY ON [1200 SQ. FT.]

BASEMENT MECH. ROOM --&gt; CHILL &amp; HOT WATER FLANGE, VALVE, PUMP COVERS [100 SQ. FT.]

BASEMENT MECH RM --&gt; COLD &amp; CHILL WATER ELBOWS [59 LIN. FT.]



MECH. ROOM --> HOT WATER ELBOWS [56 SQ. FT.]  
MECH. ROOM 5TH FLOOR --> STEAM ELBOWS [15 LIN. FT.]

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

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

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

**APPENDIX B:**  
**Contractor's One Year Guarantee**

Project Name: John Welsh Humanities Center Building Fire Alarm Upgrades

Project Number: H27-I851-C

University of South Carolina

**CONTRACTOR'S ONE YEAR GUARANTEE**

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

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

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

Defects or failures resulting from abuse by Owner.

Damage caused by fire, tornado, hail, hurricane, acts of God, wars, riots, or civil commotion.

\_\_\_\_\_  
[Name of Contracting Firm]

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

Title \_\_\_\_\_

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

SWORN TO before me this  
\_\_\_\_\_ day of \_\_\_\_\_, 2\_\_\_\_ (seal)

\_\_\_\_\_ State

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