



UNIVERSITY OF  
**SOUTH CAROLINA**

Project Manual

# **Innovation Center Park**

Project #H27-Z263

February 2, 2016

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Atlanta, GA 30327



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**PROJECT NUMBER:** H27-Z263

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## **TECHNICAL SPECIFICATIONS**

### DIVISION 01 - GENERAL REQUIREMENTS

- 01 33 00 Submittal Procedures
- 01 44 00 Quality Requirements
- 01 74 00 Cleaning & Waster Management
- 01 77 00 Closeout Procedures
- 01 78 39 Project Record Documents
- 01 79 00 Demonstration & Training

### DIVISION 03 - CONCRETE

- 03 30 00 Cast-in-Place Concrete

### DIVISION 04 - MASONRY

- 04 20 00 Unit Masonry
- 04 72 00 Cast Stone

### DIVISION 31 - EARTHWORK

- 31 20 00 Earth Moving

### DIVISION 32 - EXTERIOR IMPROVEMENTS

- 32 13 13.26 Colored Concrete Paving
- 32 13 73 Unit Paving
- 32 84 00 Planting Irrigation
- 32 91 00 Finish Grading
- 32 92 00 Landscaping
- 32 92 23 Sodding

# SE-310 INVITATION FOR CONSTRUCTION SERVICES

PROJECT NAME: Innovation Center Park

PROJECT NUMBER: H27-Z263

PROJECT LOCATION: Blossom Street at Assembly Street, Columbia SC

BID SECURITY REQUIRED? Yes  No  NOTE: Contractor may be subject to a performance appraisal at the close of the project.  
PERFORMANCE BOND REQUIRED? Yes  No   
PAYMENT BOND REQUIRED? Yes  No  CONSTRUCTION COST RANGE: \$ \$150,000 - 200,000

DESCRIPTION OF PROJECT: Small (17,000 SF) urban courtyard on the USC campus, to be built between the existing Horizon 1 building and the Innovation Center building currently under construction. Project includes concrete walls, steps, and pavement; unit pavers; planting & irrigation; site lighting. Small and minority business participation is encouraged

BIDDING DOCUMENTS/PLANS MAY BE OBTAINED FROM: http://purchasing.sc.edu See Facilities/Construction

PLAN DEPOSIT AMOUNT: \$ \_\_\_\_\_ IS DEPOSIT REFUNDABLE Yes  No  N/A

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

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

N/A

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

A/E NAME: David W. Floyd

A/E CONTACT: Matthew Scott

A/E ADDRESS: Street/PO Box: 3715 Northside Parkway, Northcreek 300, Suite 720

City: Atlanta State: GA ZIP: 30327-

EMAIL: msscott@sitesolutionsla.com

TELEPHONE: 404-835-0714

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

AGENCY: University of South Carolina

AGENCY PROJECT COORDINATOR: Aimee B. Rish

ADDRESS: Street/PO Box: 743 Greene Street

City: Columbia State: SC ZIP: 29208-

EMAIL: arish@fmc.sc.edu

TELEPHONE: 803-777-2261

FAX: 803-777-7334

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

PRE-BID DATE: 3/30/2016 TIME: 10AM PLACE: 743 Greene St; Cola SC 29208 Conf Rm 053

BID CLOSING DATE: 4/13/2016 TIME: 2PM PLACE: 743 Greene St; Cola SC 29208 Conf Rm 053

BID DELIVERY ADDRESSES:

HAND-DELIVERY:

Attn: Aimee B. Rish "Bid Enclosed"

743 Greene St.

Columbia, SC 29208

MAIL SERVICE:

Attn: Aimee B. Rish "Bid Enclosed"

743 Greene St.

Columbia, SC 29208

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

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

(OSE Project Manager)

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

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**AGENCY:** University of South Carolina

**PROJECT NAME:** H27-Z263

**PROJECT NUMBER:** Innovation Center Park

**PROJECT LOCATION:** Blossom & Assembly Streets, Columbia, SC

**PROCUREMENT OFFICER:** Aimee B. Rish

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

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

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

**2.4** *In Section 2.1.1:*

*After the words “Bidding Documents,” delete the word “or” and substitute the word “and.” Insert the following at the end of this section:*

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

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

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

**2.6** *Insert the following Sections 2.2 through 2.8:*

**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.

## OSE FORM 00201

### **STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

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- 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—
    - a. Those prices;
    - b. The intention to submit an bid; or
    - c. 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 a 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.
    - a. 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.a, the term "principals" means the person(s) in the bidder's organization responsible for determining the prices offered in this bid];
    - b. As an authorized agent, does certify that the principals referenced in subdivision B.2.a 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
    - c. 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-
    - a. Bidder and/or any of its Principals-
      - (i) Are not presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any state or federal agency;
      - (ii) Have not, within a three-year period preceding this bid, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of bids; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and
      - (iii) 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.a.(ii) of this provision.
    - b. 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, Bidder must submit a written explanation regarding its inability to make the certification. The certification will be considered in connection with a review of the Bidder's responsibility. Failure of the Bidder to furnish additional information as requested by the Procurement Officer may render the Bidder nonresponsible.

## OSE FORM 00201

### STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

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

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

#### 2.5 ETHICS CERTIFICATE

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

#### 2.6 RESTRICTIONS APPLICABLE TO BIDDERS & GIFTS

Violation of these restrictions may result in disqualification of your bid, suspension or debarment, and may constitute a violation of the state Ethics Act. (a) After issuance of the solicitation, ***bidder agrees not to discuss this procurement activity in any way with the Owner or its employees, agents or officials.*** All communications must be solely with the Procurement Officer. This restriction may be lifted by express written permission from the Procurement Officer. This restriction expires once a contract has been formed. (b) Unless otherwise approved in writing by the Procurement Officer, ***bidder agrees not to give anything to the Owner, any affiliated organizations, or the employees, agents or officials of either, prior to award.*** (c) Bidder acknowledges that the policy of the State is that a governmental body should not accept or solicit a gift, directly or indirectly, from a donor if the governmental body has reason to believe the donor has or is seeking to obtain contractual or other business or financial relationships with the governmental body. Regulation 19-445.2165(C) broadly defines the term donor.

#### 2.7 IRAN DIVESTMENT ACT CERTIFICATION

(a) The Iran Divestment Act List is a list published by the State Fiscal Accountability Authority pursuant to Section 11-57-310 that identifies persons engaged in investment activities in Iran. Currently, the list is available at the following URL: <http://procurement.sc.gov/PS/PS-iran-divestment.phtm>(.) Section 11-57-310 requires the government to provide a person ninety days written notice before he is included on the list. The following representation, which is required by Section 11-57-330(A), is a material inducement for the State to award a contract to you. (b) By signing your Offer, you certify that, as of the date you sign, you are not on the then-current version of the Iran Divestment Act List. (c) You must notify the Procurement Officer immediately if, at any time before posting of a final statement of award, you are added to the Iran Divestment Act List.

#### 2.8 OPEN TRADE REPRESENTATION (JUN 2015)

By submitting an Offer, Offeror represents that Offeror is not currently engaged in the boycott of a person or an entity based in or doing business with a jurisdiction with whom South Carolina can enjoy open trade, as defined in SC Code Section 11-35-5300. [02-2A083-1]

- 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."



## **OSE FORM 00201**

### **STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

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**2.10** *Insert the following Section 3.1.5*

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

**2.11** *In Section 3.2.2:*

*Delete the words "and Sub-bidders"*

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

**2.12** *In Section 3.2.3:*

*In the first Sentence, insert the word "written" before the word "Addendum." Insert the following at the end of the section:*

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

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

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

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

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

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

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

**2.16** *Insert the following Sections 3.4.5 and 3.4.6:*

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

**3.4.6** If an emergency or unanticipated event interrupts normal government processes so that bids cannot be received at the government office designated for receipt of bids by the exact time specified in the solicitation, the time specified for receipt of bids will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal government processes resume. In lieu of an automatic extension, an Addendum may be issued to reschedule bid opening. If state offices are closed at the time a pre-bid or pre-proposal conference is scheduled, an Addendum will be issued to reschedule the conference.

**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.

## **OSE FORM 00201**

### **STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

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

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

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

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

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

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

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

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

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

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

**2.25** *Delete Section 4.2.2 and substitute the following:*

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

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

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

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

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

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

## **OSE FORM 00201**

### **STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

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**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 4.3.5:*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## **OSE FORM 00201**

### **STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

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

#### **6.1 CONTRACTOR'S RESPONSIBILITY**

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

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

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

**2.37** Insert the following Section 6.4

#### **6.4 CLARIFICATION**

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

**2.38** Delete Section 7.1.2 and substitute the following:

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

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

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

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

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

**2.42** Delete the language of Section 7.2.2 and insert the word "Reserved."

**2.43** Delete the language of Article 8 and insert the following:

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

**2.44** Insert the following Article 9:

#### **ARTICLE 9 MISCELLANEOUS**

##### **9.1 NONRESIDENT TAXPAYER REGISTRATION AFFIDAVIT INCOME TAX WITHHOLDING IMPORTANT TAX NOTICE - NONRESIDENTS ONLY**

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

## **OSE FORM 00201**

### **STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

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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 (Available through SC Department of Revenue).

#### **9.2 CONTRACTOR LICENSING**

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

#### **9.3 SUBMITTING CONFIDENTIAL INFORMATION**

For every document Bidder submits in response to or with regard to this solicitation or request, Bidder must separately mark with the word "CONFIDENTIAL" every page, or portion thereof, that Bidder contends contains information that is exempt from public disclosure because it is either (a) a trade secret as defined in Section 30-4-40(a)(1), or (b) privileged & confidential, as that phrase is used in Section 11-35-410. For every document Bidder submits in response to or with regard to this solicitation or request, Bidder must separately mark with the words "TRADE SECRET" every page, or portion thereof, that Bidder contends contains a trade secret as that term is defined by Section 39-8-20 of the Trade Secrets Act. For every document Bidder submits in response to or with regard to this solicitation or request, Bidder must separately mark with the word "PROTECTED" every page, or portion thereof, that Bidder contends is protected by Section 11-35-1810. All markings must be conspicuous; use color, bold, underlining, or some other method in order to conspicuously distinguish the mark from the other text. Do not mark your entire bid as confidential, trade secret, or protected! If your bid, or any part thereof, is improperly marked as confidential or trade secret or protected, the State may, in its sole discretion, determine it nonresponsive. If only portions of a page are subject to some protection, do not mark the entire page. By submitting a response to this solicitation, Bidder (1) agrees to the public disclosure of every page of every document regarding this solicitation or request that was submitted at any time prior to entering into a contract (including, but not limited to, documents contained in a response, documents submitted to clarify a response, & documents submitted during negotiations), unless the page is conspicuously marked "TRADE SECRET" or "CONFIDENTIAL" or "PROTECTED", (2) agrees that any information not marked, as required by these bidding instructions, as a "Trade Secret" is not a trade secret as defined by the Trade Secrets Act, & (3) agrees that, notwithstanding any claims or markings otherwise, any prices, commissions, discounts, or other financial figures used to determine the award, as well as the final contract amount, are subject to public disclosure. In determining whether to release documents, the State will detrimentally rely on Bidders's marking of documents, as required by these bidding instructions, as being either "Confidential" or "Trade Secret" or "PROTECTED". By submitting a response, Bidder agrees to defend, indemnify & hold harmless the State of South Carolina, its officers & employees, from every claim, demand, loss, expense, cost, damage or injury, including attorney's fees, arising out of or resulting from the State withholding information that Bidder marked as "confidential" or "trade secret" or "PROTECTED".

#### **9.4 POSTING OF INTENT TO AWARD**

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

**Room or Area of Posting:** Lobby

**Building Where Posted:** University of South Carolina Facilities

**Address of Building:** 743 Greene St, Columbia, SC 29208

**WEB site address (if applicable):** <http://purchasing.sc.edu>

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

#### **9.5 PROTEST OF SOLICITATION OR AWARD**

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

# OSE FORM 00201

## STANDARD SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

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

- A. by email to [protest-ose@mso.sc.gov](mailto:protest-ose@mso.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

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

### 9.8 TAX CREDIT FOR SUBCONTRACTING WITH MINORITY FIRMS

Pursuant to Section 12-6-3350, taxpayers, who utilize certified minority subcontractors, may take a tax credit equal to 4% of the payments they make to said subcontractors. The payments claimed must be based on work performed directly for a South Carolina state contract. The credit is limited to a maximum of fifty thousand dollars annually. The taxpayer is eligible to claim the credit for 10 consecutive taxable years beginning with the taxable year in which the first payment is made to the subcontractor that qualifies for the credit. After the above ten consecutive taxable years, the taxpayer is no longer eligible for the credit. The credit may be claimed on Form TC-2, "Minority Business Credit." A copy of the subcontractor's certificate from the Governor's Office of Small and Minority Business (OSMBA) is to be attached to the contractor's income tax return. Taxpayers must maintain evidence of work performed for a State contract by the minority subcontractor. Questions regarding the tax credit and how to file are to be referred to: SC Department of Revenue, Research and Review, Phone: (803) 898-5786, Fax: (803) 898-5888. The subcontractor must be certified as to the criteria of a "Minority Firm" by the Governor's Office of Small and Minority Business Assistance (OSMBA). Certificates are issued to subcontractors upon successful completion of the certification process. Questions regarding subcontractor certification are to be referred to: Governor's Office of Small and Minority Business Assistance, Phone: (803) 734-0657, Fax: (803) 734-2498. Reference: SC §11-35-5010 – Definition for Minority Subcontractor & SC §11-35-5230 (B) – Regulations for Negotiating with State Minority Firms.

### 9.9 OTHER SPECIAL CONDITIONS OF THE WORK

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END OF DOCUMENT

# AIA Document A310

## Bid Bond (2010 Edition)

Original AIA document on file at the office of the  
University of South Carolina  
Facilities Department  
743 Greene Street  
Columbia, SC 29208

**SE-330**  
**LUMP SUM 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 NAME:** Innovation Center Park  
**PROJECT NUMBER:** H27-Z263

**OFFER**

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

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

- Bid Bond with Power of Attorney**                       **Electronic Bid Bond**                       **Cashier's Check**
- (Bidder check one)*

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

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

- ADDENDA:**                       #1                       #2                       #3                       #4                       #5

§ 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):* Construction of small courtyard park, including concrete walks, steps and walls, unit paving, planting & irrigation

**\$** \_\_\_\_\_, which sum is hereafter called the Base Bid.

*(Bidder - insert Base Bid Amount on line above)*



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**LUMP SUM BID FORM**

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

**ALTERNATE # 1** (Brief Description): Exterior site lighting

**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): Site furniture (benches, tables/chairs and litter receptacles)

**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): Granite medallion in lieu of pavers at terrace

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

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

§ 6.3 **UNIT PRICES:**

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

<b>No.</b>	<b>ITEM</b>	<b>UNIT OF MEASURE</b>	<b>ADD</b>	<b>DEDUCT</b>
<u>1.</u>	_____	_____	\$ _____	\$ _____
<u>2.</u>	_____	_____	\$ _____	\$ _____
<u>3.</u>	_____	_____	\$ _____	\$ _____
<u>4.</u>	_____	_____	\$ _____	\$ _____
<u>5.</u>	_____	_____	\$ _____	\$ _____
<u>6.</u>	_____	_____	\$ _____	\$ _____
<u>7.</u>	_____	_____	\$ _____	\$ _____
<u>8.</u>	_____	_____	\$ _____	\$ _____

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**LUMP SUM BID FORM**

**§ 7. LISTING OF PROPOSED SUBCONTRACTORS PURSUANT TO SECTION 3020(b)(i), CHAPTER 35, TITLE 11 OF THE SOUTH CAROLINA CODE OF LAWS, AS AMENDED**  
*(See Instructions on the following page BF-2A)*

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

<b>SUBCONTRACTOR CLASSIFICATION</b> <b>By License Classification and/or Subclassification</b> <i>(Completed by Owner)</i>	<b>SUBCONTRACTOR'S PRIME CONTRACTOR'S NAME</b> <i>(Must be completed by Bidder)</i>	<b>SUBCONTRACTOR'S PRIME CONTRACTOR'S SC LICENSE NUMBER</b> <i>(Requested, but not Required)</i>
<b>BASE BID</b>		
Concrete		
Masonry		
<b>ALTERNATE #1</b>		
Electrical		
<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.

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**LUMP SUM BID FORM**

**INSTRUCTIONS FOR  
SUBCONTRACTOR LISTING**

1. Section 7 of the Bid Form sets forth an Owner developed list of contractor/subcontractor specialties by contractor license category and/or subcategory for which bidder is required to identify the entity (subcontractor(s) and/or himself) Bidder will use to perform the work of each listed specialty..
  - a. **Column A:** The Owner fills out this column, which identifies the contractor/subcontractor specialties for which the bidder must list either a subcontractor or himself as the entity that will perform this work. Subcontractor specialties are identified by contractor license categories or subcategories listed in Title 40 of the South Carolina Code of laws. If the owner has not identified a specialty, the bidder does not list a subcontractor.
  - b. **Columns B and C:** In these columns, the Bidder identifies the subcontractors it will use for the work of each specialty listed by the Owner in Column A. Bidder must identify only the subcontractor(s) who will perform the work and no others. Bidders should make sure that their identification of each subcontractor is clear and unambiguous. A listing that could be any number of different entities may be cause for rejection of the bid as non-responsive. For example, a listing of M&M without more may be problematic if there are multiple different licensed contractors in South Carolina whose names start with M&M.
2. **Subcontractor Defined:** For purposes of subcontractor listing, a subcontractor is an entity who will perform work or render service to the prime contractor to or about the construction site pursuant to a contract with the prime contractor. Bidder should not identify sub-subcontractors in the spaces provided on the bid form but only those entities with which bidder will contract directly. Likewise, do not identify material suppliers, manufacturers, and fabricators that will not perform physical work at the site of the project but will only supply materials or equipment to the bidder or proposed subcontractor(s).
3. **Subcontractor Qualifications:** Bidder must only list subcontractors who possess a South Carolina Contractor's license with the license classification and/or subclassification identified by the Owner in the first column on the left. The subcontractor license must also be within the appropriate license group for the work of the specialty. If Bidder lists a subcontractor who is not qualified to perform the work, the Bidder will be rejected as non-responsive.
4. **Use of Own forces:** If under the terms of the Bidding Documents, Bidder is qualified to perform the work of a listed specialty and Bidder does not intend to subcontract such work but to use Bidder's own employees to perform such work, the Bidder must insert its own name in the space provided for that specialty.
5. **Use of Multiple Subcontractors:**
  - a. If Bidder intends to use multiple subcontractors to perform the work of a single specialty listing, Bidder must insert the name of each subcontractor Bidder will use, preferably separating the name of each by the word "**and**". 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**". Bidder must use each entity listed for the work of a single specialty listing in the performance of that work.
  - b. **Optional Listing Prohibited:** Bidder may not list multiple subcontractors for a specialty listing, in a form that provides the Bidder the option, after bid opening or award, to choose to use one or more but not all the listed subcontractors to perform the work for which they are listed. A listing, which on its face requires subsequent explanation to determine whether it is an optional listing, is non-responsive. If bidder intends to use multiple entities to perform the work for a single specialty listing, bidder must clearly set forth on the bid form such intent. Bidder may accomplish this by simply inserting the word "**and**" between the names of each entity listed for that specialty. Agency will reject as non-responsive a listing that contains the names of multiple subcontractors separated by a blank space, the word "or", a virgule (that is a /), or any separator that the Agency may reasonably interpret as an optional listing.
6. If Bidder is awarded the contract, bidder must, except with the approval of the Agency for good cause shown, use the listed entities to perform the work for which they are listed.
7. If bidder is awarded the contract, bidder will not be allowed to substitute another entity as subcontractor in place of a subcontractor listed in Section 7 of the Bid except for one or more of the reasons allowed by the SC Code of Laws.
8. Bidder's failure to identify an entity (subcontractor or himself) to perform the work of a subcontractor specialty listed in the first column on the left will render the Bid non-responsive.

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

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

**a) CONTRACT TIME**

Bidder agrees that the Date of Commencement of the Work shall be established in a Notice to Proceed to be issued by the Owner. Bidder agrees to substantially complete the Work within 75 Calendar Days from the Date of Commencement, subject to adjustments as provided in the Contract Documents.

**b) LIQUIDATED DAMAGES**

Bidder further agrees that from the compensation to be paid, the Owner shall retain as Liquidated Damages the amount of \$ 200.00 for each Calendar Day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted time for Substantial Completion as provided in the Contract Documents. This amount is intended by the parties as the predetermined measure of compensation for actual damages, not as a penalty for nonperformance.

**§ 10. AGREEMENTS**

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

**§ 11. ELECTRONIC BID BOND**

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

**ELECTRONIC BID BOND NUMBER:** \_\_\_\_\_

**SIGNATURE AND TITLE:** \_\_\_\_\_

**SE-330  
LUMP SUM BID FORM**

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

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

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

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

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

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

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

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

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

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

**PRINT NAME:** \_\_\_\_\_

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

# AIA Document A101

## Standard Form of Agreement between Owner & Contractor (2007 Edition)

Original AIA document on file at the office of the  
University of South Carolina  
Facilities Department  
743 Greene Street  
Columbia, SC 29208

# OSE FORM 00811

## STANDARD SUPPLEMENTARY CONDITIONS

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**AGENCY:** University of South Carolina

**PROJECT NAME:** Innovation Center Park

**PROJECT NUMBER:** H27-Z263

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### 1. GENERAL CONDITIONS

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

### 2. STANDARD SUPPLEMENTARY CONDITIONS

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

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

### 3. MODIFICATIONS TO A201-2007

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

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

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

**3.3** *Add the following Section 1.1.9:*

#### **1.1.9 NOTICE TO PROCEED**

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

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

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

**3.5** *Delete Section 1.5.1 and substitute the following:*

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

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

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

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

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

## **OSE FORM 00811**

### **STANDARD SUPPLEMENTARY CONDITIONS**

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**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 two hard copies and one electronic copy (.pdf format) of the Contract Documents. The Contractor may make reproductions of the Contract Documents pursuant to Section 1.5.2.

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

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

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

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

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

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

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

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

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

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

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



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

The Contractor shall comply with the requirements of Title 12, Chapter 8 of the South Carolina Code of Laws, as amended, regarding withholding tax for nonresidents, employees, contractors and subcontractors.

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

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

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

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

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

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

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

acceptable to the Owner,

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

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

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

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

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

**3.10.3** Additional requirements, if any, for the constructions schedule are as follows:

*(Check box if applicable to this Contract)*

The construction schedule shall be in a detailed precedence-style critical path management (CPM) or primavera-type format satisfactory to the Owner and the Architect that shall also (1) provide a graphic representation of all activities and events that will occur during performance of the work; (2) identify each phase of construction and occupancy; and (3) set forth dates that are critical in ensuring the timely and orderly completion of the Work in accordance with the requirements of the Contract Documents (hereinafter referred to as “Milestone Dates”). Upon review and acceptance by the Owner and the Architect of the Milestone Dates, the construction schedule shall be deemed part of the Contract Documents and attached to the Agreement as Exhibit “A.” If not accepted, the construction schedule shall be promptly revised by the Contractor in accordance with the recommendations of the Owner and the Architect and resubmitted for acceptance. The 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.

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**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."*

**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 which the Contractor is responsible shall not erect any sign on the Project site without the prior written consent of the Owner.

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

including loss of use resulting therefrom,

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

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

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

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

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

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

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

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

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

Work completed and correlated with the

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

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

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

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

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

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

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

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

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

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

**3.41** *In the first sentence of Section 5.2.3, delete the words "...or Architect..." in the two places they appear.*

**3.42** *Delete the words "...or Architect..." in the in the first sentence of Section 5.2.4 and insert the following sentence at the end of Section 5.2.4:*

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

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

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

**3.44** *Add the following Section 5.2.6:*

**5.2.6** The Iran Divestment Act List is a list published by the State Fiscal Accountability Authority pursuant to Section 11-57-310 that identifies persons engaged in investment activities in Iran. Currently, the list is available at the following URL: <http://procurement.sc.gov/PS/PS-iran-divestment.phtm>(.) Consistent with Section 11-57-330(B), the Contractor shall not contract with any person to perform a part of the Work, if, at the time you enter into the subcontract, that person is on the then-current version of the Iran Divestment Act List.

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

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

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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.

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

**3.47** *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.

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

**3.49** *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.

**3.50** *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-380 "Construction Change Order") and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

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

**3.51** *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.

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**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 expenditure 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.

**3.52** *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.

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

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

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

**3.54** *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.

**3.55** *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:

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

#### **7.6 PRICING DATA AND AUDIT**

##### **7.6.1 Cost or Pricing Data.**

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

**7.6.2** Cost or pricing data means all facts that, as of the date specified by the parties, prudent buyers and sellers would reasonably expect to affect price negotiations significantly. Cost or pricing data are factual, not judgmental; and are verifiable. While they do not indicate the accuracy of the prospective contractor's judgment about estimated future costs or projections, they do include the data forming the basis for that judgment. Cost or pricing data are more than historical accounting data; they are all the facts that can be reasonably expected to contribute to the soundness of estimates of future costs and to the validity of determinations of costs already incurred.

##### **7.6.3 Records Retention.**

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

#### **3.56** 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.

#### **3.57** 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.

#### **3.58** 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.

#### **3.59** 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

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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.

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

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

**3.61** *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.

**3.62** *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,"*

**3.63** *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.

**3.64** *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

**3.65** *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.

**3.66** *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 have been delivered to the Owner.

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

**3.68** *Delete Section 9.8.3 and substitute the following:*

**9.8.3.1** Upon receipt of the Contractor’s list, the Architect, with the Owner and any other person the Architect or the Owner choose, will make an inspection on a date and at a time mutually agreeable to the Architect, Owner, and Contractor, to determine whether the Work or designated portion thereof is substantially complete. The Contractor shall furnish access for the inspection and testing as provided in this Contract. The inspection shall include a demonstration by the Contractor that all equipment, systems and operable components of the Work function properly and in accordance with the Contract Documents. If the Architect’s inspection discloses any item, whether or not included on the Contractor’s list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion. If more than one Substantial Completion inspection is required, the Contractor shall reimburse the Owner for all costs of reinspections or, at the Owner’s option, the costs may be deducted from payments due to the Contractor.

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

**3.69** *In the second sentence of Section 9.8.5, delete the words “and consent of surety, if any.”*

**3.70** *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.”*

**3.71** *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.

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

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



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**3.73** 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.

**3.74** 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.

**3.75** 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.

**3.76** 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.

**3.77** 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.

**3.78** 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.

**3.79** 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

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

**3.81** 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.

**3.82** 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.

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- (1) COMMERCIAL GENERAL LIABILITY:
  - (a) General Aggregate (per project) ..... \$1,000,000
  - (b) Products/Completed Operations ..... \$1,000,000
  - (c) Personal and Advertising Injury ..... \$1,000,000
  - (d) Each Occurrence ..... \$1,000,000
  - (e) Fire Damage (Any one fire) ..... \$50,000
  - (f) Medical Expense (Any one person) ..... \$5,000
- (2) BUSINESS AUTO LIABILITY (including All Owned, Non-owned, and Hired Vehicles):
  - (a) Combined Single Limit ..... \$1,000,000
- (3) WORKER'S COMPENSATION:
  - (a) State Statutory
  - (b) Employers Liability ..... \$100,000 per Acc.  
..... \$500,000 Disease, Policy Limit  
..... \$100,000 Disease, Each Employee

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

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

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

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

Prior to commencement of the Work, and thereafter upon renewal or replacement of each required policy of insurance, Contractor shall provide to the Owner a signed, original certificate of liability insurance (ACORD 25). Consistent with this Section 11.1, the certificate shall identify the types of insurance, state the limits of liability for each type of coverage, name the Owner a Consultants as Certificate Holder, provide that the general aggregate limit applies per project, and provide that coverage is written on an occurrence basis. Both the certificates and the endorsements must be received directly from either the Contractor's insurance agent or the insurance company. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, naming the Owner as an additional insured for claims made under the Contractor's completed operations, and otherwise meeting the above requirements, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

**3.84** *Delete Section 11.1.4 and substitute the following:*

**11.1.4** A failure by the Owner to either (i) demand a certificate of insurance or written endorsement required by Section 11.1, or (ii) 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.

**3.85** *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.

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

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

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**3.88** *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.

**3.89** *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.

**3.90** *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.

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

**3.92** *Delete Section 11.3.6 and substitute the following:*

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

**3.93** *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.

**3.94** *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.

**3.95** *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.

**3.96** *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.

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**3.97** *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.

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

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

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

**3.99** *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.

**3.100** *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.

**3.101** *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.*

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

unless otherwise provided in the Contract Documents.

**3.103** *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.

**3.104** *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.

**3.105** *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.

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**3.106** Delete Section 13.3 and substitute the following:

#### **13.3 WRITTEN NOTICE**

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

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

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

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

Unless expressly provided otherwise,

**3.108** 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
- 15.6.5** Service of Process

**3.109** 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.

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

**3.111** Add the following Sections 13.8 through 13.17:

#### **13.8 PROCUREMENT OF MATERIALS BY OWNER**

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

#### **13.9 INTERPRETATION OF BUILDING CODES**

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

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#### **13.10 MINORITY BUSINESS ENTERPRISES**

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

#### **13.11 SEVERABILITY**

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

#### **13.12 ILLEGAL IMMIGRATION**

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

#### **13.17 OPEN TRADE (JUN 2015):**

During the contract term, including any renewals or extensions, Contractor will not engage in the boycott of a person or an entity based in or doing business with a jurisdiction with whom South Carolina can enjoy open trade, as defined in SC Code Section 11-35-5300. [07-7A053-1]

#### **3.112 Delete Section 14.1.1 and substitute the following:**

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

- .1** Issuance of an order of a court or other public authority having jurisdiction that requires substantially all Work to be stopped; or
- .2** An act of government, such as a declaration of national emergency that requires substantially all Work to be stopped.

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- .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

**3.113** *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.

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

**3.115** *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.

**3.116** *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.*

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

**3.118** *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.

**3.119** *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.

**3.120** *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.

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

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

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work;
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders; and
- .4 complete the performance of the Work not terminated, if any.

**3.122** *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.

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### **STANDARD SUPPLEMENTARY CONDITIONS**

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**3.123** *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 State Fiscal Accountability Authority 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.

**3.124** *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.

**3.125** *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.

**3.126** *Delete Section 15.1.3 and substitute the following:*

**15.1.3 CONTINUING CONTRACT PERFORMANCE**

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

**3.127** *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.

**3.128** *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) 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 and days the contractor was already scheduled to work. 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.



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### **STANDARD SUPPLEMENTARY CONDITIONS**

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**3.129** *Delete Section 15.1.6 and substitute the following:*

#### **15.1.6 CLAIMS FOR LISTED DAMAGES**

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

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

**15.1.6.2** For the Contractor, listed damages are (i) lost revenue and profit, (ii) losses resulting from injury to business or reputation, (iii) additional or escalated overhead and administration expenses, (iv) additional financing costs, (v) attorney's fees, (vi) any interest, except to the extent allowed by Section 13.6 (Interest); (vii) unamortized equipment costs; and, (viii) losses incurred by subcontractors for the types of damages the Contractor has waive as against the Owner. Without limitation, this mutual waiver is applicable to all damages due to either party's termination in accordance with Article 14.

**15.1.6.3** 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).

**3.130** *Add the following Section 15.1.7:*

#### **15.1.7 WAIVER OF CLAIMS AGAINST THE ARCHITECT**

Notwithstanding any other provision of the Contract Documents, including Section 1.2.1, but subject to a duty of good faith and fair dealing, the Contractor waives all claims against the Architect and any other design professionals who provide design and/or project management services to the Owner, either directly or as independent contractors or subcontractors to the Architect, for listed damages arising out of or relating to this Contract. The listed damages are (i) lost revenue and profit, (ii) losses resulting from injury to business or reputation, (iii) additional or escalated overhead and administration expenses, (iv) additional financing costs, (v) attorney's fees, (vi) any interest; (vii) unamortized equipment costs; and, (viii) losses incurred by subcontractors for the types of damages the Contractor has waive as against the Owner. This mutual waiver is not applicable to amounts due or obligations under Section 3.18 (Indemnification).

**3.131** *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.*

**3.132** *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.

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### **STANDARD SUPPLEMENTARY CONDITIONS**

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- 15.5.4** If the Architect requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Architect when the response or supporting data will be furnished or (3) advise the Architect that all supporting data has already been provided. Upon receipt of the response or supporting data, the Architect will render an initial decision in accordance with Section 15.5.5.
- 15.5.5** The Architect will render an initial decision in writing; (1) stating the reasons therefor; and (2) notifying the parties of any change in the Contract Sum or Contract Time or both. The Architect will deliver the initial decision to the parties within two weeks of receipt of any response or supporting data requested pursuant to Section 16.4 or within such longer period as may be mutually agreeable to the parties. If the parties accept the initial decision, the Architect shall prepare a Change Order with appropriate supporting documentation for the review and approval of the parties and the Office of State Engineer. If either the Contractor, Owner, or both, disagree with the initial decision, the Contractor and Owner shall proceed with dispute resolution in accordance with the provisions of Section 15.6.
- 15.5.6** In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

#### **15.6 DISPUTE RESOLUTION**

- 15.6.1** If a claim is not resolved pursuant to Section 15.5 to the satisfaction of either party, both parties shall attempt to resolve the dispute at the field level through discussions between Contractor's Representative and Owner's Representative. If a dispute cannot be resolved through Contractor's Representative and Owner's Representative, then the Contractor's Senior Representative and the Owner's Senior Representative, upon the request of either party, shall meet as soon as conveniently possible, but in no case later than twenty-one days after such a request is made, to attempt to resolve such dispute. Prior to any meetings between the Senior Representatives, the parties will exchange relevant information that will assist the parties in resolving their dispute. The meetings required by this Section are a condition precedent to resolution pursuant to Section 15.6.2.
- 15.6.2** If after meeting in accordance with the provisions of Section 15.6.1, the Senior Representatives determine that the dispute cannot be resolved on terms satisfactory to both the Contractor and the Owner, then either party may submit the dispute by written request to South Carolina's Chief Procurement Officer for Construction (CPOC). Except as otherwise provided in Article 15, all claims, claims, or controversies relating to the Contract shall be resolved exclusively by the appropriate Chief Procurement Officer in accordance with Title 11, Chapter 35, Article 17 of the South Carolina Code of Laws, or in the absence of jurisdiction, only in the Court of Common Pleas for, or in the absence of jurisdiction a federal court located in, Richland County, State of South Carolina. Contractor agrees that any act by the State regarding the Contract is not a waiver of either the State's sovereign immunity or the State's immunity under the Eleventh Amendment of the United State's Constitution.
- 15.6.3** If any party seeks resolution to a dispute pursuant to Section 15.6.2, the parties shall participate in non-binding mediation to resolve the claim. If the claim is governed by Title 11, Chapter 35, Article 17 of the South Carolina Code of Laws as amended and the amount in controversy is \$100,000.00 or less, the CPOC shall appoint a mediator, otherwise, the mediation shall be conducted by an impartial mediator selected by mutual agreement of the parties, or if the parties cannot so agree, a mediator designated by the American Arbitration Association ("AAA") pursuant to its Construction Industry Mediation Rules. The mediation will be governed by and conducted pursuant to a mediation agreement negotiated by the parties or, if the parties cannot so agree, by procedures established by the mediator.
- 15.6.4** Without relieving any party from the other requirements of Sections 15.5 and 15.6, either party may initiate proceedings in the appropriate forum prior to initiating or completing the procedures required by Sections 15.5 and 15.6 if such action is necessary to preserve a claim by avoiding the application of any applicable statutory period of limitation or repose.

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## STANDARD SUPPLEMENTARY CONDITIONS

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### 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.

### 3.133 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)*

The inspections required for this Work are:

*(Indicate which services are required and the provider)*

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

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

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

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

none

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

Electrical, Irrigation

**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)*

Refer to Project Manual

**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)*

Refer to 'USC Supplementary General Conditions for Construction Projects'

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

Refer to Project Manual

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

none

## USC SUPPLEMENTAL GENERAL CONDITIONS FOR CONSTRUCTION PROJECTS

### WORK AREAS

1. The Contractor shall maintain the job site in a safe manner at all times. This includes (but is not limited to) the provision and/or maintenance of lighting, fencing, barricades around obstructions, and safety and directional signage.
2. Contractor's employees shall take all reasonable means not to interrupt the flow of student traffic in building corridors, lobbies, stairs and exterior walks. All necessary and reasonable safety precautions shall be taken to prevent injury to building occupants while transporting materials and equipment through the work area. Providing safe, accessible, plywood-shielded pedestrian ways around construction may be required if a suitable alternative route is not available.
3. 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. The lay-down area will be clearly identified to the contractor by the Project Manager, with a sketch or drawing provided to USC Parking Services. In turn, Parking Services will mark off this area with a sign containing the project name, Project Manager's 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 Project Manager. The area will be maintained in a neat and orderly fashion.
4. Work vehicles parked in the lay down area (or designated parking areas) will be clearly marked and display a USC-furnished placard for identification. No personal vehicles will be allowed in this area, or in any areas surrounding the construction site. Personal vehicles must be parked in the perimeter parking lots or garages. Temporary parking permits can be obtained at the Contractor's expense at the USC Parking Office located in the Pendleton Street parking garage. Refer to the CAMPUS VEHICLE EXPECTATIONS (below) for additional information.
5. Contractor is responsible for removal of all debris from the site, and is required to provide the necessary dumpsters which will be emptied on a regular basis. 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.
6. The Contractor shall be responsible for erosion and sediment control measures where ground disturbances are made.

### PROJECT FENCING

7. All construction projects with exterior impacts shall have construction fencing at the perimeter. Fencing shall be 6' chain link with black or green privacy fabric (80-90% blockage). For fence panels with footed stands, sandbag weights shall be placed on the inside of the fence. Ripped sandbags shall be replaced immediately.
8. For projects with long fencing runs and/or high profile locations, decorative USC banners shall be used on top of privacy fabric; banners should be used at a ratio of one banner for every five fence panels. USC Project Manager will make arrangements for banner delivery for Contractor to hang.
9. The use of plastic safety fencing is discouraged and shall only be used on a temporary basis (less than four weeks) where absolutely necessary. Safety fencing shall be a neon yellow-green, high-

visibility fencing equal to 'Kryptonight' by Tenax. Safety fencing shall be erected and maintained in a neat and orderly fashion throughout the project.

10. Vehicles and all other equipment shall be contained within a fenced area if they are on site for more than 3 consecutive calendar days.

#### BEHAVIOR

11. Fraternalization between Contractor's employees and USC students, faculty or staff is strictly prohibited.
12. 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.
13. Contractor's employees must adhere to the University's policy of maintaining a drug-free and tobacco-free campus.

#### HAZARDOUS MATERIALS & SAFETY COMPLIANCE

14. A USC Permit to Work must be signed prior to any work being performed by the general contractor or sub-contractor(s).
15. 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). Upon request, the contractor will submit all Safety Programs and Certificates of Insurance to the University for review.
16. Contractor must notify the University immediately upon the discovery of suspect material which may contain asbestos or other such hazardous materials. These materials must not be disturbed until approved by the USC Project Manager.
17. In the event of an OSHA inspection, the Contractor shall immediately call the Facilities Call Center, 803-777-4217, and report that an OSHA inspector is on site. An employee from USC's Safety Unit will arrive to assist in the inspection.

#### LANDSCAPE & TREE PROTECTION

18. In conjunction with the construction documents, the USC Arborist shall direct methods to minimize damage to campus trees. Tree protection fencing is required to protect existing trees and other landscape features to be affected by a construction project. The location of this fence will be evaluated for each situation with the USC Arborist, Landscape Architect and Project Manager. Tree protection fencing may be required along access routes as well as within the project area itself. Fence locations may have to be reset throughout the course of the project.
19. The tree protection fence shall be 6' high chain link fence with 80-90% privacy screening unless otherwise approved by USC Arborist and/or Landscape Architect. If the tree protection fence is completely within a screened jobsite fence perimeter, privacy fabric is not required. In-ground fence posts are preferred in most situations for greater protection. If utility or pavement conflicts are present, fence panels in footed stands are acceptable. See attached detail for typical tree protection fencing.
20. No entry, vehicle parking, 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.

21. Where it is necessary to cross walks, tree root zones (i.e., under canopy) or lawns the following protective measures shall be taken:
  - a. For single loads up to 9,000 lbs., a 3/4" minimum plywood base shall be placed over 4" of mulch.
  - b. For single loads over 9,000 lbs., two layers of 3/4" plywood shall be placed over 4" of mulch.
  - c. Plywood sheets shall be replaced as they deteriorate or delaminate with exposure.
  - d. For projects requiring heavier loads, a construction entry road consisting of 10' X 16' oak logging mats on 12" coarse, chipped, hardwood base. Mulch and logging mats shall be supplemented throughout the project to keep matting structurally functional.
22. Damage to any trees during construction shall be assessed by the USC Arborist, who will stipulate what action will be taken for remediation of damage. The cost of any and all remediation will be assumed by the contractor at no additional cost to the project. Compensation for damages may be assessed up to \$500 per caliper inch of tree (up to 8") and \$500 per inch of diameter at breast height (for trees over 8").
23. Damage to trunks and limbs, as well as disturbance of the root zone under the dripline of tree, including compaction of soil, cutting or filling, or storage of materials, shall qualify as damage and subject to remediation.
24. Any damage to existing pavements or landscaping (including lawn areas and irrigation) will be remediated before final payment is made.

#### TEMPORARY FACILITIES

25. Contractor will be responsible for providing its own temporary toilet facilities, unless prior arrangements are made with the USC Project Manager.
26. Use of USC communications facilities (telephones, computers, etc.) by the Contractor is prohibited, unless prior arrangements are made with the USC Project Manager.

#### CAMPUS KEYS

27. 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.

#### WELDING

28. A welding (hot work) permit must be issued by the University Fire Marshall before any welding can begin inside a building. The USC Project Manager will coordinate.

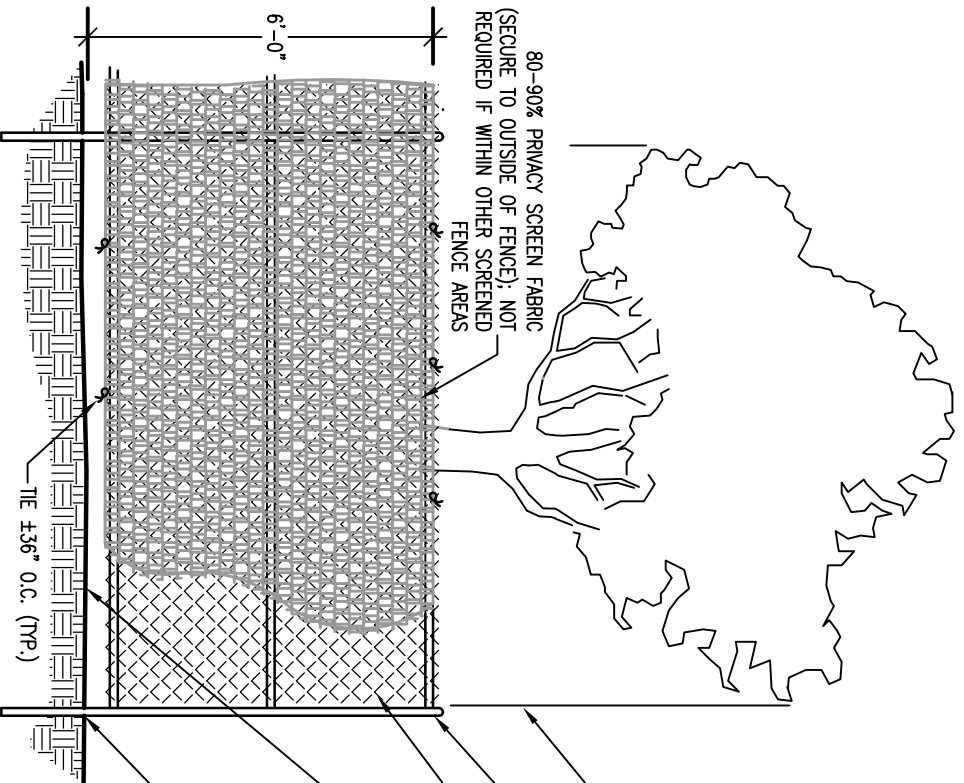
#### PROJECT EVALUATION & CLOSE-OUT

29. For all projects over \$100,000, including IDCs, a Contractor Performance Evaluation (SE 397) will be 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 by the USC Project Manager and a Construction Performance rating will be established.
30. 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.

#### CAMPUS VEHICLE EXPECTATIONS

31. Personal vehicles must be parked in the perimeter parking lots or garages. Temporary parking permits can be obtained at the Contractor's expense at the USC Parking Office located in the Pendleton Street parking garage.
32. All motorized vehicle traffic on USC walkways and landscape areas must be approved by the USC Project Manager and Parking Division, have a USC parking placard, and be parked within the approved laydown area. Violators may be subject to ticketing, towing and fines.
33. All motorized vehicles that leak or drip liquids are prohibited from traveling or parking on walks or landscaped areas.
34. Drivers of equipment or motor vehicles that damage university hardscape or landscape will be held responsible for damages and restoration expense.
35. 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.
36. All drivers of equipment and vehicles shall be respectful of University landscape, equipment, structures, fixtures and signage.
37. All incidents of property damage shall be reported to Parking Services or the Work Management Center.



TREE PROTECTION FENCING (IN-GROUND) WITH SCREENING

NOTES:

1. PROVIDE PROTECTION FENCING FOR ALL TREES WITHIN AREA OF DISTURBANCE AND CONSTRUCTION ACCESS.
2. PROTECTION FENCING SHALL BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION.
3. PROTECTION FENCING TO BE PLACED AT THE OUTSIDE OF THE CANOPY DRIPLINE, OR AT A DISTANCE OF ONE FOOT PER ONE INCH OF TREE DIAMETER, MEASURED AT BREAST HEIGHT, WHICHEVER IS LARGER, UNLESS OTHERWISE INDICATED ON LANDSCAPE PLAN OR APPROVED BY UNIVERSITY ARBORIST.
4. IN-GROUND POSTS ARE STANDARD. IF EXISTING ROOTS, UTILITIES OR PAVEMENT PRECLUDE USE OF IN-GROUND POSTS, FOOTED STANDS ARE ACCEPTABLE. SAND BAGS SHALL BE PLACED ON THE INSIDE OF FENCE.
5. DAMAGE TO ANY TREES DURING CONSTRUCTION SHALL BE ASSESSED BY UNIVERSITY ARBORIST AND THE UNIVERSITY ARBORIST SHALL STIPULATE WHAT ACTION WILL BE TAKEN FOR REMEDIATION OF DAMAGE. THE COST OF ANY AND ALL REMEDIATION WILL BE ASSUMED BY CONTRACTOR AT NO ADDITIONAL COST TO THE PROJECT.
6. DISTURBANCE OF ROOT ZONE UNDER DRIPLINE OF TREE, INCLUDING COMPACTION OF SOIL, CUTTING OR FILLING OR STORAGE OF MATERIALS SHALL QUALIFY AS DAMAGE AND SUBJECT TO REMEDIATION.



Project Name: Innovation Center Park

Project Number: H27-Z263

University of South Carolina

**CONTRACTOR'S ONE YEAR GUARANTEE**

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

WE \_\_\_\_\_  
as 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 \_\_\_\_\_

**SE-355**  
**PERFORMANCE BOND**

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

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

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

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

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

Name: 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: Innovation Center Park  
State Project Number: H27-Z263  
Brief Description of Awarded Work, as found on the SE-330 or SE-332, Bid Form: Small courtyard/park

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

Name: David W. Floyd  
Address: 3715 Northside Parkway, Northcreek 300, Ste. 720  
Atlanta, GA 30327

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**  
*(shall be no earlier than Date of Contract)*

**BOND NUMBER** \_\_\_\_\_

**CONTRACTOR**

**SURETY**

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

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

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

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

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

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

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

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

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

## SE-355

# PERFORMANCE BOND

### NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

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

**SE-357**  
**LABOR & 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

State Project Name: Innovation Center Park

State Project Number: H27-Z263

Brief Description of Awarded Work, as found on the SE-330 or SE-332, Bid Form: small courtyard/park

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

Name: David W. Floyd

Address: 3715 Northside Parkway, Northcreek 300, Suite 720

Atlanta, GA 30327

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

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

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

**BOND NUMBER** \_\_\_\_\_

**CONTRACTOR**

**SURETY**

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

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

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

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

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

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

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

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

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

## SE-357

# LABOR & MATERIAL PAYMENT BOND

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### NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Agency to pay for all labor, materials and equipment required for use in the performance of the Contract, which is incorporated herein by reference.
  2. With respect to the Agency, this obligation shall be null and void if the Contractor:
    - 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants; and
    - 2.2 Defends, indemnifies and holds harmless the Agency from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Contract.
  3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
  4. With respect to Claimants, and subject to the provisions of Title 29, Chapter 5 and the provisions of §11-35-3030(2)(c) of the SC Code of Laws, as amended, the Surety's obligation under this Bond shall arise as follows:
    - 4.1 Every person who has furnished labor, material or rental equipment to the Contractor or its subcontractors for the work specified in the Contract, and who has not been paid in full therefore before the expiration of a period of ninety (90) days after the date on which the last of the labor was done or performed by him or material or rental equipment was furnished or supplied by him for which such claim is made, shall have the right to sue on the payment bond for the amount, or the balance thereof, unpaid at the time of institution of such suit and to prosecute such action for the sum or sums justly due him.
    - 4.2 A remote claimant shall have a right of action on the payment bond upon giving written notice by certified or registered mail to the Contractor within ninety (90) days from the date on which such person did or performed the last of the labor or furnished or supplied the last of the material or rental equipment upon which such claim is made.
    - 4.3 Every suit instituted upon a payment bond shall be brought in a court of competent jurisdiction for the county or circuit in which the construction contract was to be performed, but no such suit shall be commenced after the expiration of one year after the day on which the last of the labor was performed or material or rental equipment was supplied by the person bringing suit.
  5. When the Claimant has satisfied the conditions of paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
    - 5.1 Send an answer to the Claimant, with a copy to the Agency, within sixty (60) days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
    - 5.2 Pay or arrange for payment of any undisputed amounts.
    - 5.3 The Surety's failure to discharge its obligations under this paragraph 5 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a claim. However, if the Surety fails to discharge its obligations under this paragraph 5, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs to recover any sums found to be due and owing to the Claimant.
  6. Amounts owed by the Agency to the Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any Performance Bond. By the Contractor furnishing and the Agency accepting this Bond, they agree that all funds earned by the contractor in the performance of the Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Agency's prior right to use the funds for the completion of the Work.
  7. The Surety shall not be liable to the Agency, Claimants or others for obligations of the Contractor that are unrelated to the Contract. The Agency shall not be liable for payment of any costs or expenses of any claimant under this bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
  8. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.
  9. Notice to the Surety, the Agency or the Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, the Agency or the contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
  10. By the Contractor furnishing and the Agency accepting this Bond, they agree that this Bond has been furnished to comply with the statutory requirements of the South Carolina Code of Laws, as amended, and further, that any provision in this Bond conflicting with said statutory requirements shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.
  11. Upon request of any person or entity appearing to be a potential beneficiary of this bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.
  12. Any dispute, suit, action or proceeding arising out of or relating to this Bond shall be governed by the laws of the State of South Carolina.
- ### 13. DEFINITIONS
- 13.1 Claimant: An individual or entity having a direct contract with the Contractor or with a Subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of the Contractor and the Contractor's Subcontractors, and all other items for which a mechanic's lien might otherwise be asserted.
  - 13.2 Remote Claimant: A person having a direct contractual relationship with a subcontractor of the Contractor or subcontractor, but no contractual relationship expressed or implied with the Contractor.
  - 13.3 Contract: The agreement between the Agency and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

SE-380

CHANGE ORDER NO.: \_\_\_\_\_

**CHANGE ORDER TO CONSTRUCTION CONTRACT**

AGENCY: University of South Carolina

PROJECT NAME: Innovation Center Park

PROJECT NUMBER: H27-Z263

CONTRACTOR: \_\_\_\_\_ CONTRACT DATE: \_\_\_\_\_

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

**ADJUSTMENTS IN THE CONTRACT SUM:**

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

**ADJUSTMENTS IN THE CONTRACT TIME:**

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

**CONTRACTOR ACCEPTANCE:**

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
*(Signature of Representative)*

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

**A/E RECOMMENDATION FOR ACCEPTANCE:**

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
*(Signature of Representative)*

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

**AGENCY ACCEPTANCE AND CERTIFICATION:**

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
*(Signature of Representative)*

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

- Change is within Agency Construction Contract Change Order Certification of: \$ \_\_\_\_\_
- Change is not within Agency Construction Contract Change Order Certification of: \$ \_\_\_\_\_

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

AUTHORIZED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
*(OSE Project Manager)*

## SECTION 01 33 00 - SUBMITTAL PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other Submittals.
- B. See Division 1 Section "Quality Requirements" for submitting test and inspection reports
- C. Division 1 Section "Closeout Procedures" for submitting warranties.
- D. See Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

#### 1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's responsive action.
- B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

#### 1.3 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- C. Processing Time: Allow enough time for submittal review, including time for re-submittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of

the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.

1. Initial Review: Allow 14 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
  2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  3. Re-submittal Review: Allow 14 days for review of each re-submittal.
- D. Identification: Place a permanent label or title block on each submittal for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
  2. Provide a space approximately 4" X 5" inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
  3. Include the following information on label for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name and address of Architect.
    - d. Name and address of Contractor.
    - e. Name and address of subcontractor.
    - f. Name and address of supplier.
    - g. Name of manufacturer.
    - h. Submittal number or other unique identifier, including revision identifier.
      - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06 10 00.01). Re-submittals shall include an alphabetic suffix after another decimal point (e.g., 06 10 00.01.A).
    - i. Number and title of appropriate Specification Section.
    - j. Drawing number and detail references, as appropriate.
    - k. Location(s) where product is to be installed, as appropriate.
    - l. Other necessary identification.
- E. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- F. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
1. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.
- G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will discard submittals received from sources other than Contractor.



1. Transmittal Form: Use CSI Form 12.1A.
- H. Re-submittals: Make re-submittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
  2. Note date and content of revision in label or title block and clearly indicate extent of revision.
  3. Resubmit submittals until they are marked
    - a. Final Unrestricted Release: When the Architect marks a submittal “Approved,” the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
    - b. Final-But-Restricted Release: When the Architect marks a submittal “Approved as Noted,” the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Use only final submittals with mark indicating action taken by Architect.
- a. Final Unrestricted Release: When the Architect marks a submittal “Approved,” the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
  - b. Final-But-Restricted Release: When the Architect marks a submittal “Approved as Noted,” the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.

#### 1.4 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

- A. General: At Contractor's written request, copies of Architect's CAD files will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
1. Modification of CAD files used during construction are not permitted.

## PART 2 - PRODUCTS

### 2.1 ACTION SUBMITTALS

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

- B. **Product Data:** Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show which products and options are applicable.
  3. Include the following information, as applicable:
    - a. Manufacturer's written recommendations.
    - b. Manufacturer's product specifications.
    - c. Manufacturer's installation instructions.
    - d. Manufacturer's catalog cuts.
    - e. Wiring diagrams showing factory-installed wiring.
    - f. Printed performance curves.
    - g. Operational range diagrams.
    - h. Compliance with specified referenced standards.
    - i. Testing by recognized testing agency.
  4. **Number of Copies:** Submit three copies of Product Data, unless otherwise indicated. Architect will return two copies. Mark up and retain one returned copy as a Project Record Document.
- C. **Shop Drawings:** Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. **Preparation:** Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Dimensions.
    - b. Identification of products.
    - c. Fabrication and installation drawings.
    - d. Roughing-in and setting diagrams.
    - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
    - f. Shopwork manufacturing instructions.
    - g. Templates and patterns.
    - h. Schedules.
    - i. Notation of coordination requirements.
    - j. Notation of dimensions established by field measurement.
    - k. Relationship to adjoining construction clearly indicated.
    - l. Seal and signature of professional engineer if specified.
    - m. **Wiring Diagrams:** Differentiate between manufacturer-installed and field-installed wiring.
  2. **Sheet Size:** Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
  3. **Number of Copies:** Submit two opaque (bond) copies of each submittal. Architect will return one copy.

- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of appropriate Specification Section.
  3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
  4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
  5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
- E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location.
1. Number of Copies: Submit three copies of product schedule or list, unless otherwise indicated. Architect will return two copies.
- F. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."
- G. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."

- H. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A.
  - 1. Number of Copies: Submit three copies of subcontractor list, unless otherwise indicated. Architect will return two copies.

## 2.2 INFORMATIONAL SUBMITTALS

- I. General: Prepare and submit Informational Submittals required by other Specification Sections.
  - 1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Architect will not return copies.
  - 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
  - 3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."
- J. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."
- K. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- N. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- O. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- P. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- Q. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

- R. **Material Test Reports:** Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- S. **Product Test Reports:** Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- T. **Research/Evaluation Reports:** Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- U. **Preconstruction Test Reports:** Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- V. **Compatibility Test Reports:** Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- W. **Field Test Reports:** Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- X. **Maintenance Data:** Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."
- Y. **Design Data:** Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- Z. **Manufacturer's Instructions:** Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.
- AA. **Manufacturer's Field Reports:** Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
  - 1. Statement on condition of substrates and their acceptability for installation of product.
  - 2. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.

3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
- BB. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- CC. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect.
  1. Architect will not review submittals that include MSDSs and will return them for re-submittal.

## 2.2 INFORMATIONAL SUBMITTALS

- A. This Article directly relates to AIA Document A201 requirement for Contractor to provide professional services where indicated by the Contract Documents. AIA Document A201 refers to design professional, but no definition is included. Delete this Article if authorities having jurisdiction do not allow Contractor to perform these services. See Evaluations.
- B. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- C. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
  1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 3 - EXECUTION

### 3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date

of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### 3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
  - 1. Final Unrestricted Release: When the Architect marks a submittal "Approved," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
  - 2. Final-But-Restricted Release: When the Architect marks a submittal "Approved as Noted," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
  - 3. 'Returned for Re-submittal: When the Architect marks a submittal "Amend and Re-submit" do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity.' Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
  - 4. 'Returned for Re-submittal: When the Architect marks a submittal "Rejected: Re-submit" do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity.' Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals are not acceptable, will be considered non-responsive, and will be returned without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION

(NOT USED)



## SECTION 01 40 00 - QUALITY REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 2. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. See Divisions 2 through 32 Sections for specific test and inspection requirements.

#### 1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
- D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.

- E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.
- K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of 3 previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

### 1.3 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

#### 1.4 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Reports: Prepare and submit certified written reports that include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, and telephone number of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Complete test or inspection data.
  - 9. Test and inspection results and an interpretation of test results.
  - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  - 12. Name and signature of laboratory inspector.
  - 13. Recommendations on retesting and re-inspecting.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

#### 1.5 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed

for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirement for specialists shall not supersede building codes and regulations governing the Work.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
  - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
  - 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
  - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
  - 4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
  - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  - 6. Demolish and remove mockups when directed, unless otherwise indicated.
- J. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 2 through 16.

## 1.6 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."
- D. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify

agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

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

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

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

#### 1.7 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

B. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and re-inspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- C. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
  - 2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."
- D. Protect construction exposed by or for quality-control service activities.
- E. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

(NOT USED)



## SECTION 01 74 00 - CLEANING & WASTE MANAGEMENT

### PART 1 - GENERAL

#### 1.1 SCOPE

This section covers furnishing all labor, material, equipment, tools, supervision and incidentals necessary to the disposal of materials unsuitable for use or reuse of the Project as specified herein.

#### 1.2 DEFINITION

“Waste materials” includes all material, unsuitable for reuse, which is encountered during operations performed under this contract. Materials such as, but not limited to, rock, refuse, stumps, logs, and other combustible or non-combustible materials, such as plant containers, straps, fertilizer and chemical containers, and wire baskets.

### PART 2 - PRODUCT

Not applicable.

### PART 3 - EXECUTION

#### 3.1 DISPOSAL OF DEBRIS OR WASTE

- A. Waste Materials: Deposit all waste material in disposal areas so that adjacent property will not be adversely affected.
- B. Contractor shall make all arrangements necessary for the on site storage and off site disposal of all debris or waste, all at no additional cost to the Owner.

END OF SECTION

(NOT USED)

## SECTION 01 77 00 - CLOSEOUT PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Inspection procedures.
  - 2. Warranties.
  - 3. Final cleaning.
- B. See Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
- C. See Divisions 2 through 32 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

#### 1.2 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
  - 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
  - 7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  - 8. Complete startup testing of systems.
  - 9. Submit test/adjust/balance records.
  - 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  - 11. Advise Owner of changeover in heat and other utilities.
  - 12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

### 1.3 FINAL COMPLETION

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

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes if necessary.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

### 1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit 3 copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

## 1.5 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

## PART 2 – PRODUCTS

### 2.1 MATERIALS

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

## PART 3 – EXECUTION

### 3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
  - a. Clean project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
  - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
  - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
  - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
  - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
  - f. Remove debris and surface dust from limited access spaces, equipment vaults, manholes, attics, and similar spaces.
  - g. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
  - h. Remove all plant tags.
    - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
  - i. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - j. Replace parts subject to unusual operating conditions.
  - k. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - l. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
  - m. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

## SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
  - 1. Record Drawings.
  - 2. Record Specifications.
  - 3. Record Product Data.
- B. See Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
- C. See Divisions 2 through 32 Sections for specific requirements for Project Record Documents of the Work in those Sections.

#### 1.2 SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one set(s) of marked-up Record Prints.
  - 2. Number of Copies: Submit copies of Record Drawings as follows:
    - a. Initial Submittal: Submit one set(s) of plots from corrected Record CAD Drawings and one set of marked-up Record Prints. Architect will initial and date each plot and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Architect will return plots and prints for organizing into sets, printing, binding, and final submittal.
    - b. Final Submittal: Submit one set of marked-up Record Prints, and the following:
      - 1) Record Transparencies: One set.
      - 2) Record CAD Drawing Files and Plots: One set.
      - 3) Copies printed from Record CAD Drawing Plots: Three. Print each Drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one copy of each Product Data submittal.

## PART 2 – PRODUCTS

### 2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
  2. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
  3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Transparencies: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected transparencies of the Contract Drawings and Shop Drawings.
1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
  2. Refer instances of uncertainty to Architect for resolution.
  3. Owner will furnish Contractor one set of transparencies of the Contract Drawings for use in recording information.
  4. Print the Contract Drawings and Shop Drawings for use as Record Transparencies. Architect will make the Contract Drawings available to Contractor's print shop.
- C. Record CAD Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected CAD Drawings of the Contract Drawings, as follows:
1. Format: Auto CAD 2000.
  2. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.
  3. Refer instances of uncertainty to Architect for resolution.
  4. Architect will furnish Contractor one set of CAD Drawings of the Contract Drawings for use in recording information.



- a. Architect makes no representations as to the accuracy or completeness of CAD Drawings as they relate to the Contract Drawings.
  - b. CAD Software Program: The Contract Drawings are available in Auto CAD 2000.
- D. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
  2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
  3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
  4. Identification: As follows:
    - a. Project name.
    - b. Date.
    - c. Designation "PROJECT RECORD DRAWINGS."
    - d. Name of Architect.
    - e. Name of Contractor.

## 2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
  3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
  4. Note related Change Orders and Record Drawings where applicable.

## 2.3 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

### PART 3 – EXECUTION

#### 3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION

## SECTION 01 79 00 - DEMONSTRATION & TRAINING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
  - 1. Demonstration of operation of systems, subsystems, and equipment.
  - 2. Training in operation and maintenance of systems, subsystems, and equipment.
  - 3. Demonstration and training videotapes.
- B. See Divisions 2 through 16 Sections for specific requirements for demonstration and training for products in those Sections.

#### 1.2 SUBMITTALS

- A. Instruction Program: Submit three copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
- B. Demonstration and Training Videotapes: Submit three copies within seven days of end of each training module.

#### 1.3 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Pre-instruction Conference: Conduct conference at Project site. Review methods and procedures related to demonstration and training.
- D. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

## PART 2 – PRODUCTS

### 2.2 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
1. Cistern Pump and Controls
  2. Fountain Equipment
  3. Irrigation System
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
1. Basis of System Design, Operational Requirements, and Criteria: Include system and equipment descriptions, operating standards, regulatory requirements, equipment function, operating characteristics, limiting conditions, and performance curves.
  2. Documentation: Review emergency, operations, and maintenance manuals; Project Record Documents; identification systems; warranties and bonds; and maintenance service agreements.
  3. Emergencies: Include instructions on stopping; shutdown instructions; operating instructions for conditions outside normal operating limits; instructions on meaning of warnings, trouble indications, and error messages; and required sequences for electric or electronic systems.
  4. Operations: Include startup, break-in, control, and safety procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; operating procedures for emergencies and equipment failure; and required sequences for electric or electronic systems.
  5. Adjustments: Include alignments and checking, noise, vibration, economy, and efficiency adjustments.
  6. Troubleshooting: Include diagnostic instructions and test and inspection procedures.
  7. Maintenance: Include inspection procedures, types of cleaning agents, methods of cleaning, procedures for preventive and routine maintenance, and instruction on use of special tools.
  8. Repairs: Include diagnosis, repair, and disassembly instructions; instructions for identifying parts; and review of spare parts needed for operation and maintenance.

## PART 3 – EXECUTION

### 3.1 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
  - 1. Owner will furnish an instructor to describe Owner's operational philosophy.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
  - 1. Schedule training with Owner with at least seven days' advance notice.

END OF SECTION

(NOT USED)

## SECTION 03 30 00 - CAST IN PLACE CONCRETE

### PART 1 – GENERAL

#### 1.1 SUMMARY

- A. This Section specifies cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.

#### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture.

#### 1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- B. Comply with ACI 301, "Specification for Structural Concrete."
- C. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

### PART 2 - PRODUCTS

#### 2.1 FORMWORK

- A. Furnish formwork and formwork accessories according to ACI 301.

#### 2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Plain-Steel Wire: ASTM A 82, as drawn.
- C. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

- D. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.

## 2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout Project:
  - 1. Portland Cement: ASTM C 150, Type I
    - a. Fly Ash: ASTM C 618, Class C.
    - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
  - 2. Blended Hydraulic Cement: ASTM C 595, Type IS, portland blast-furnace slaged Portland cement.
- B. Normal-Weight Aggregate: ASTM C 33, graded, 1/4" – 3/8" nominal maximum aggregate size.
- C. Water: ASTM C 94/C 94M potable.
- D. Synthetic Fiber: Monofilament polypropylene fibers engineered and designed for use in concrete pavement, complying with ASTM C 1116, Type III, 1/2 to 1-1/2 inches (13 to 38 mm) long.

## 2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride. Any admixture used in the concrete mix shall be subject to review by LM Scofield.
  - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
  - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- C. Colored Admixture for Integrally Colored Concrete:
  - 1. Manufacturer:
    - a. L.M. SCOFIELD COMPANY, Douglasville, Georgia (800) 800-9900
  - 2. Materials:



- a. Admixture shall be a colored, water-reducing, admixture containing no calcium chloride with coloring agents that are limeproof and UV resistant.
- b. Colored admixture shall conform to the following:
  - 1) ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete.
  - 2) ASTM C494 – Standard Specification for Chemical Admixtures for Concrete
  - 3) AASHTO M194 – Chemical Admixtures

CHROMIX® Admixtures as manufactured by the L.M. SCOFIELD COMPANY, Douglasville, Georgia, are considered to conform to the requirements of this specification.

## 2.5 RELATED MATERIALS

- A. Vapor Retarder: Multi-ply reinforced polyethylene sheet, ASTM E 1745, Class C, or polyethylene sheet, ASTM D 4397, not less than 10 mils (0.25 mm) thick.
- B. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.
- C. Joint Sealants: All joints shall be filled with joint sealant after concrete has cured. Refer to Section 07920.

## 2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
- F. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
- G. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

## 2.7 CONCRETE MIXTURES

- A. Comply with ACI 301 requirements for concrete mixtures.

- B. Normal-Weight Concrete: Prepare design mixes, proportioned according to ACI 301, as follows:
  - 1. Minimum Compressive Strength: 3000 psi (20.7 MPa) at 28 days.
  - 2. Maximum Water-Cementitious Materials Ratio: 0.50
  - 3. Slump Limit: 4 inches (100 mm) for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch (25 mm).
  - 4. Air Content: Maintain within range permitted by ACI 301. Do not allow air content of floor slabs to receive troweled finishes to exceed 3 percent.
  - 5. Any admixture used in the concrete mix shall be subject to review by LM Scofield.
- C. Synthetic Fiber: Uniformly disperse in concrete mix at manufacturer's recommended rate but not less than a rate of 1.0 lb/cu. yd. (0.60 kg/cu. m)

## 2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
  - 1. When air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

## 2.9 CONCRETE FINISH RETARDER

- A. Spray applied, film forming, water based top surface retarder, calibrated for specific sized aggregate and finish requirements.
  - 1. Acceptable Materials: "Top Cast" by Grace Construction Products. Customer Service Center - 888-336-9303, [www.graceconstructionproducts.com](http://www.graceconstructionproducts.com) or contact Dennis Baugh Product Specialist W.R. Grace & Co. 62 Whittemore Ave., Cambridge, MA 02140. 800-354-5414 x 5439, 703-626-1577
- B. Spray applied film forming protective coating for surfaces adjacent to retarded finish surfaces.
  - 1. Acceptable Materials: "Face Off" by Grace Construction Products, [www.graceconstructionproducts.com](http://www.graceconstructionproducts.com), Grace Customer Service Center 888-336-9303 or Dennis Baugh Product Specialist W.R. Grace & Co. 62 Whittemore Ave., Cambridge, Ma 02140. 800-354-5414 x 5439, 703-626-1577

## PART 3 - EXECUTION

### 3.1 FORMWORK

- A. Design, construct, erect, brace, and maintain formwork according to ACI 301.

### 3.2 VAPOR RETARDERS

- A. Install, protect, and repair vapor retarders according to ASTM E 1643; place sheets in position with longest dimension parallel with direction of pour.
  - 1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended adhesive or joint tape.

### 3.3 STEEL REINFORCEMENT

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

### 3.4 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness.
- C. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
  - 1. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

### 3.5 CONCRETE PLACEMENT

- A. Comply with ACI 301 for measuring, batching, mixing, transporting, and placing concrete.
- B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
- C. Do not add water to concrete during delivery, at Project site, or during placement.
- D. Consolidate concrete with mechanical vibrating equipment.

### 3.6 CONCRETE RETARDER APPLICATION

- A. Preparation and Application

1. Protect all curbs, borders, adjacent stones, pavers, etc. that are not to receive retarded finish prior to application of retarders. Use Protector Face Off by Grace Construction Products.
2. Pour concrete, seed aggregates where called for, float and lightly trowel finish where required. [ *Do Not Delay The Application of The Surface Retarder Beyond the Loss of the Initial Bleed Water Especially in Warmer Temperatures for Best Results.* ]
3. Apply Top Cast Retarders with a low-pressure sprayer at a rate of 250-350 sq.ft./ gal. Per manufacturers' requirements. Material is colored to allow for verification of even and complete coverage.
4. Once dry (1-2 hours), Top Cast provides protection against intermittent rain or hot, windy conditions and requires no additional covering.

B. Retarder Selection Guidelines

Number Code	Etch/Aggregate Size to Expose*	Coverage	Color
3	Acid Etch Finish	250/350 S.F. / Gal.	Lt. Blue Violet
5	Lt. Sandblast Finish	"	Lt. Blue
15	Up to 1/4"	"	Yellow
25	1/8" to 1/4"	"	Beige
50	1/8" to 3/8"	"	Canary Green
75	1/8" to 3/8"	"	Blue
100	3/8" to 1/2"	"	Gray
125	3/8" to 5/8"	"	Pink
150	3/8" to 5/8"	"	Green
200	5/8" to 1"	"	Salmon
250	1" to 1-1/2"	"	Orange

\* Values listed are for standard 6-sack mix. Always test to verify the appropriate grade for specific mix designs

FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding 1/4 inch (6.35 mm).
  1. Apply to concrete surfaces not exposed to public view
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch (3 mm).
  1. Apply to concrete surfaces exposed to public view,
- C. Exposed Aggregate Finish: Wash with water rinse/light broom or pressure wash with power equipment within 6 – 24 hours after the retarder is applied. Retarder removal intervals depend on strength of mix, exposed aggregate size and desired washing techniques. Earlier washing for light etch finishes may be necessary. Verify in test panels.

1. Do not over-finish and/or delay application beyond the initial bleeding on the light finishes.

- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

### 3.7 FINISHING UNFORMED SURFACES

- A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on surface.

1. Do not further disturb surfaces before starting finishing operations.

- C. Scratch Finish: Apply scratch finish to surfaces indicated and surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes, unless otherwise indicated.
- D. Float Finish: Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, fluid-applied or direct-to-deck-applied membrane roofing, or sand-bed terrazzo.
- E. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.
- F. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.
- G. Nonslip Broom Finish: Apply a nonslip broom finish to surfaces indicated and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by broom with fiber-bristle broom perpendicular to main traffic route.

### 3.8 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during

finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:
  - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with **12-inch (300-mm)** lap over adjacent absorptive covers.
  - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least **12 inches (300 mm)**, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
  - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
  - 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

### 3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- B. Tests: Perform according to ACI 301.

### 3.10 REPAIRS

- A. Remove and replace concrete that does not comply with requirements in this Section.

END OF SECTION

## SECTION 04 20 00 – UNIT MASONRY

### PART 1 – GENERAL

#### 1.1 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
1. Concrete masonry units (CMUs).
  2. Decorative concrete masonry units.
  3. Pre-faced concrete masonry units.
  4. Concrete brick.
  5. Face brick.
  6. Building (common) brick.
  7. Hollow brick.
  8. Glazed Structural-clay facing tile.
- B. See Division 5 Section "Metal Fabrications" for furnishing steel lintels and shelf angles for unit masonry.
- C. See Division 7 Section "Sheet Metal Flashing and Trim" for furnishing manufactured reglets installed in masonry joints for metal flashing.

#### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For reinforcing steel. Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."
- C. Samples for each type and color of colored mortars.
- D. Material Certificates: For each type of product indicated. Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards.
1. For masonry units include material test reports substantiating compliance with requirements.
- E. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

#### 1.3 QUALITY ASSURANCE

- A. Preconstruction Testing Service: Owner will engage a qualified independent testing agency to perform preconstruction testing indicated below. ~~Payment for these services will be made from the Testing and Inspecting Allowance, as authorized by Change Orders.~~
1. Clay Masonry Unit Test: For each type of unit required, per ASTM C 67.
  2. Concrete Masonry Unit Test: For each type of unit required, per ASTM C 140.
  3. Mortar Test (Property Specification): For each mix required, per ASTM C 780.
  4. Grout Test (Compressive Strength): For each mix required, per ASTM C 1019.
- B. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.
- C. Sample Panels: Build sample panels to verify selections made under sample submittals and to demonstrate aesthetic effects.
1. Build sample panels for typical exterior wall in sizes approximately 48 inches long by 48 inches high.

#### 1.4 PROJECT CONDITIONS

- A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

### PART 2 – PRODUCTS

#### 2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
  2. Products: Subject to compliance with requirements, provide one of the products specified.
  3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
  4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

#### 2.2 CONCRETE MASONRY UNITS (CMUs)



- A. Shapes: Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
- B. Integral Water Repellent: Provide units made with liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength where indicated.
  - 1. Available Products:
    - a. Addiment Incorporated; Block Plus W-10.
    - b. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Dry-Block.
    - c. Master Builders, Inc.; Rheopel.
- C. Concrete Masonry Units: ASTM C 90 UBC Standard 21-4.
  - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi (19.3 MPa).
  - 2. Weight Classification: Lightweight.
  - 3. Pattern and Texture for Decorative Units:
    - a. Standard pattern, ground finish.
    - b. Standard pattern, split-face finish.
    - c. Standard pattern, split-ribbed finish.
    - d. Scored vertically, standard finish.
    - e. Triple scored vertically, standard finish.
  - 4. Pre-faced Concrete Masonry Units: Lightweight concrete units, with smooth resinous facing complying with ASTM C 744.
    - a. Size: Manufactured with pre-faced surfaces having 1/16-inch- (1.5-mm-) wide returns of facing to create 1/4-inch- (6.5-mm-) wide mortar joints.
- D. Concrete Brick: ASTM C 55.
  - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2500 psi (17.3 MPa).
  - 2. Weight Classification: Lightweight.

## 2.3 CONCRETE AND MASONRY LINTELS

- A. General: Provide either concrete or masonry lintels, at Contractor's option, complying with requirements below.
- B. Concrete Lintels: Precast units matching concrete masonry units and with reinforcing bars indicated or required to support loads indicated.
- C. Concrete Lintels: Precast or formed-in-place concrete lintels complying with requirements in Division 3 Section "Cast-in-Place Concrete."

- D. Masonry Lintels: Made from bond beam concrete masonry units with reinforcing bars placed as indicated and filled with coarse grout.

## 2.4 BRICK

- A. General: Provide shapes indicated and as follows:
1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
  2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
- B. Face Brick: ASTM C 216, Grade MW, Type FBX.
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 5500 psi (37.9 MPa).
  2. Initial Rate of Absorption: Less than 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested per ASTM C 67.
  3. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
  4. Surface Coating: Brick with colors or textures produced by application of coatings shall withstand 50 cycles of freezing and thawing per ASTM C 67 with no observable difference in the applied finish viewed from 10 feet (3 m).
  5. Size (Actual Dimensions): 3-1/2 inches (89 mm) wide by 2-1/4 inches (57 mm) high by 7-1/2 inches (190 mm) long.
  6. Size (Actual Dimensions): 4 inches (89 mm) wide by 2-1/4 inches (57 mm) high by 8 inches (203 mm) long.
  7. Size (Actual Dimensions): 3-1/2 inches (89 mm) wide by 2-3/4 inches (70 mm) high by 7-1/2 inches (190 mm) long or 3-5/8 inches (92 mm) wide by 2-13/16 inches (71 mm) high by 7-5/8 inches (194 mm) long.
- C. Hollow Brick: ASTM C 652 UBC Standard 21-1, Grade SW MW or SW, Class H40V (void areas between 25 and 40 percent of gross cross-sectional area) H60V (void areas between 40 and 60 percent of gross cross-sectional area), Type HBX HBS HBA HBB.
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 4400 psi (30.3 MPa).
  2. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
  3. Surface Coating: Brick with colors or textures produced by application of coatings shall withstand 50 cycles of freezing and thawing per ASTM C 67 with no observable difference in the applied finish when viewed from 10 feet (3 m).
  4. Size (Actual Dimensions): 5-1/2 inches (140 mm) wide by 3-1/2 inches (89 mm) high by 11-1/2 inches (292 mm) long.
  5. Size (Actual Dimensions): 7-1/2 inches (190 mm) wide by 3-1/2 inches (89 mm) high by 11-1/2 inches (292 mm) long .

## 2.5 STRUCTURAL-CLAY FACING TILE

### A. General:

1. Provide multicored units designed for use in reinforced, grouted masonry.
2. Provide special shapes where required for corners, jambs, coved bases, sills, and other special conditions indicated that cannot be produced by sawing standard units.

### B. Glazed Structural-Clay Facing Tile: ASTM C 126, Grade S (Select).

1. Sizes: 8W Series with actual face dimensions of 7-3/4 inches (197 mm) high by 15-3/4 inches (400 mm) long by widths indicated.
2. Provide Type I (single-faced units) where only one finished face is exposed when units are installed, and Type II (double-faced units) where two opposite finished faces are exposed when units are installed.

## 2.6 MORTAR AND GROUT MATERIALS

### A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction.

### B. Hydrated Lime: ASTM C 207, Type S.

### C. Masonry Cement: ASTM C 91.

#### 1. Products:

- a. Capital Materials Corporation; Flamingo Color Masonry Cement.
- b. Essroc, Italcementi Group; Brixment.
- c. Holcim (US) Inc.; Mortamix Masonry Cement Rainbow Mortamix Custom Buff Masonry Cement White Mortamix Masonry Cement.
- d. Lafarge North America Inc.; Magnolia Masonry Cement Lafarge Masonry Cement Florida Super Masonry Trinity Super White Masonry Type S Trinity White Masonry Type N.
- e. Lehigh Cement Company.
- f. National Cement Company, Inc.; Coosa Masonry Cement.

### D. Mortar Pigments: Iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar.

#### 1. Products:

- a. Bayer Corporation, Industrial Chemicals Div.; Bayferrox Iron Oxide Pigments.
- b. Davis Colors; True Tone Mortar Colors.
- c. Solomon Grind-Chem Services, Inc.; SGS Mortar Colors.

- E. Colored Cement Product: Packaged blend made from masonry cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.
1. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
  2. Products:
    - a. Colored Portland Cement-Lime Mix:
      1. Capital Materials Corporation; Riverton Portland Cement Lime Custom Color.
      2. Holcim (US) Inc.; Rainbow Mortamix Custom Color Cement/Lime.
      3. Lafarge North America Inc.; Eaglebond.
      4. Lehigh Cement Company; Lehigh Custom Color Portland/Lime Cement.
    - b. Colored Masonry Cement:
      1. Capital Materials Corporation; Flamingo Color Masonry Cement.
      2. Essroc, Italcementi Group; Brixment-in-Color.
      3. Holcim (US) Inc.; Rainbow Mortamix Custom Color Masonry Cement.
      4. Lafarge North America Inc.
      5. Lehigh Cement Company; Lehigh Custom Color Masonry Cement.
      6. National Cement Company, Inc.; Coosa Masonry Cement.
- F. Aggregate for Mortar: ASTM C 144.
1. For joints less than 1/4 inch (6.5 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.
  2. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- G. Aggregate for Grout: ASTM C 404.
- H. Epoxy Pointing Mortar: ASTM C 395, epoxy-resin-based material formulated for use as pointing mortar for structural-clay tile facing units.
- I. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
1. Products:
    - a. Addiment Incorporated; Mortar Kick.
    - b. Euclid Chemical Company (The); Accelguard 80.
    - c. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Morset.
    - d. Sonneborn, Div. of ChemRex; Trimix-NCA.

- J. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with concrete masonry units, containing integral water repellent by same manufacturer.

1. Products:

- a. Addiment Incorporated; Mortar Tite.
- b. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Dry-Block Mortar Admixture.
- c. Master Builders, Inc.;

- K. Water: Potable.

## 2.7 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60 (Grade 420).
- B. Masonry Joint Reinforcement: ASTM A 951; mill galvanized, carbon-steel wire for interior walls and hot-dip galvanized, carbon-steel wire for exterior walls.
1. Wire Size for Side Rods: W1.7 or 0.148-inch (3.8-mm) diameter.
  2. Wire Size for Cross Rods: W1.7 or 0.148-inch (3.8-mm) diameter.
  3. Wire Size for Veneer Ties: W1.7 or 0.148-inch (3.8-mm) diameter.
  4. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches (407 mm) o.c.
  5. Single-Wythe Masonry: Either ladder or truss type with single pair of side rods.
  6. Multi-wythe Masonry:
    - a. Ladder type with 1 side rod at each face shell of hollow masonry units more than 4 inches (100 mm) in width, plus 1 side rod at each wythe of masonry 4 inches (100 mm) or less in width.
    - b. Tab type, with 1 side rod at each face shell of backing wythe and with rectangular tabs sized to extend at least halfway through facing wythe but with at least 5/8-inch (16-mm) cover on outside face.
    - c. Adjustable (two-piece) type, with one side rod at each face shell of backing wythe and with ties that extend into facing wythe. Ties engage eyes or slots in reinforcement and extend at least halfway through facing wythe but with at least 5/8-inch (16-mm) cover on outside face.
  7. Veneers Anchored with Seismic Masonry-Veneer Anchors: Single 0.188-inch-(4.8-mm-) diameter, hot-dip galvanized, carbon-steel continuous wire.

## 2.8 TIES AND ANCHORS

- A. Materials:

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153/A 153M, Class B-2 coating.
  2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, hot-dip galvanized after fabrication to comply with ASTM A 153/A 153M.
  3. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Wire Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but with at least 5/8-inch (16-mm) cover on outside face. Outer ends of wires are bent 90 degrees and extend 2 inches (50 mm) parallel to face of veneer.
- C. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches (100 mm) wide.
1. Wire: Fabricate from 3/16-inch- (4.8-mm-) diameter, hot-dip galvanized steel wire.
- D. Adjustable Anchors for Connecting to Structure: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch- (6.4-mm-) diameter, hot-dip galvanized steel wire.
  2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch (25 mm) of masonry face, made from 0.188-inch- (4.8-mm-) diameter, hot-dip galvanized steel wire.
  3. Connector Section for Concrete: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.053-inch- (1.3-mm-) thick, steel sheet, galvanized after fabrication.
- E. Partition Top anchors: 0.097-inch- (2.5-mm-) thick metal plate with 3/8-inch- (10-mm-) diameter metal rod 6 inches (150 mm) long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.
- F. Rigid Anchors: Fabricate from steel bars 1-1/2 inches (38 mm) wide by 1/4 inch (6.4 mm) thick by 24 inches (600 mm) long, with ends turned up 2 inches (50 mm) or with cross pins.
1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A 153/A 153M.
- G. Adjustable Masonry-Veneer Anchors
1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:

- a. Structural Performance Characteristics: Capable of withstanding a 100-lbf (445-N) load in both tension and compression without deforming or developing play in excess of 0.05 inch (1.3 mm).
2. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.
    - a. Anchor Section: Rib-stiffened, sheet metal plate with screw holes top and bottom, and slotted holes for inserting wire tie.
    - b. Fabricate sheet metal anchor sections from 0.067-inch- (1.7-mm-)thick, steel sheet, galvanized after fabrication.
    - c. Wire Ties: Triangular-, rectangular-, or T-shaped wire ties fabricated from 0.188-inch- (4.8-mm-) diameter, hot-dip galvanized steel wire.
    - d. Products:
      1. Dayton Superior Corporation, Dur-O-Wal Division;.
      2. Heckmann Building Products Inc.; 315-D with 316.
      3. Hohmann & Barnard, Inc.
      4. Wire-Bond.
  3. Seismic Masonry-Veneer Anchors: Units consisting of a metal anchor section and a connector section designed to engage a continuous wire embedded in the veneer mortar joint.
    - a. Anchor Section: Rib-stiffened, sheet metal plate with screw holes top and bottom, and slotted holes for inserting connector section.
    - b. Connector Section: Rib-stiffened, sheet metal bent plate; sheet metal clip; or wire tie and rigid extruded vinyl clip designed to engage continuous wire. Size connector to extend at least halfway through veneer but with at least 5/8-inch (16-mm) cover on outside face.
    - c. Fabricate sheet metal anchor sections and other sheet metal parts from 0.067-inch- (1.7-mm-) thick, steel sheet, galvanized after fabrication.
    - d. Fabricate wire connector sections from 0.188-inch- (4.8-mm-) diameter, hot-dip galvanized, carbon-steel wire.
    - e. Products:
      1. Dayton Superior Corporation, Dur-O-Wal Division; D/A 213S.
      2. Hohmann & Barnard, Inc.; DW-10-X-Seismicclip.
      3. Wire-Bond; RJ-711 with Wire-Bond clip.

## 2.9 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing, where flashing is exposed or partly exposed and where indicated, complying with Division 7 Section "Sheet Metal Flashing and Trim."

1. Metal Drip Edges: Fabricate from stainless steel. Extend at least 3 inches (75 mm) into wall and 1/2 inch (13 mm) out from wall, with outer edge bent down 30 degrees and hemmed.

2. Metal Flashing Terminations: Fabricate from stainless steel. Extend at least 3 inches (75 mm) into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch (19 mm) and down into joint 3/8 inch (10 mm) to form a stop for retaining sealant backer rod.
  3. Metal Expansion-Joint Strips: Fabricate from stainless steel to shapes indicated.
- B. Flexible Flashing: For flashing not exposed to the exterior, use the following, unless otherwise indicated:
1. Copper-Laminated Flashing: 5-oz./sq. ft. (1.5-kg/sq. m) 7-oz./sq. ft. (2-kg/sq. m) copper sheet bonded with asphalt between 2 layers of glass-fiber cloth.
    - a. Products:
      1. Advanced Building Products Inc.; Copper Fabric Flashing.
      2. AFCO Products Inc.; Copper Fabric.
      3. Hohmann & Barnard, Inc.; H & B C-Fab Flashing.
      4. Phoenix Building Products; Type FCC-Fabric Covered Copper.
      5. Polytite Manufacturing Corp.; Copper Fabric Flashing.
      6. Sandell Manufacturing Co., Inc.; Copper Fabric Flashing.
      7. York Manufacturing, Inc.; York Copper Fabric Flashing.
    2. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than 0.030 inch (0.8 mm).
      - a. Products:
        1. Advanced Building Products Inc.; Peel-N-Seal.
        2. Carlisle Coatings & Waterproofing; CCW-705-TWF Thru-Wall Flashing.
        3. Dayton Superior Corporation, Dur-O-Wal Division; Dur-O-Barrier-44.
        4. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Perm-A-Barrier Wall Flashing.
        5. Heckmann Building Products Inc.; No. 82 Rubberized-Asphalt Thru-Wall Flashing.
        6. Hohmann & Barnard, Inc.; Textroflash.
        7. Polyguard Products, Inc.; Polyguard 300.
        8. Polytite Manufacturing Corp.; Poly-Barrier Self-Adhering Wall Flashing.
        9. Williams Products, Inc.; Everlastic MF-40.
      3. Elastomeric Thermoplastic Flashing: Composite flashing product consisting of a polyester-reinforced ethylene interpolymer alloy 0.025 inch (0.6 mm) thick, with a 0.015-inch- (0.4-mm-) thick coating of rubberized-asphalt adhesive.
        - a. Products:



1. Hyload, Inc.; Hyload Cloaked Flashing System.
4. EPDM Flashing: Sheet flashing product made from ethylene-propylene-diene terpolymer, complying with ASTM D 4637, 0.040 inch (1.0 mm) thick.
  - a. Products:
    1. Carlisle Coatings & Waterproofing; Pre-Kleened EPDM Thru-Wall Flashing.
    2. Firestone Building Products; FlashGuard.
    3. Heckmann Building Products Inc.; No. 81 EPDM Thru-Wall Flashing.
  - C. Solder and Sealants for Sheet Metal Flashings: As specified in Division 7 Section "Sheet Metal Flashing and Trim."
  - D. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer.

## 2.10 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Pre-molded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; formulated from neoprene.
  - B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall.
  - C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
  - D. Weep/Vent Products: Use the following, unless otherwise indicated:
    1. Rectangular Plastic Weep/Vent Tubing: Clear butyrate, 3/8 by 1-1/2 by 3-1/2 inches (9 by 38 by 89 mm) long.
    2. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch (3 mm) less than depth of outer wythe, in color selected from manufacturer's standard.
- b. Products:
    1. Advanced Building Products Inc.; Mortar Maze weep vent.
    2. Dayton Superior Corporation, Dur-O-Wal Division; Cell Vents.
    3. Heckmann Building Products Inc.; No. 85 Cell Vent.
    4. Hohmann & Barnard, Inc.; Quadro-Vent.
    5. Wire-Bond; Cell Vent.

3. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth 1/8 inch (3 mm) less than depth of outer wythe; in color selected from manufacturer's standard.

- a. Products:

1. Mortar Net USA, Ltd.; Mortar Net Weep Vents.

- E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

1. Provide one of the following configurations:

- a. Strips, full-depth of cavity and 10 inches (250 mm) wide, with dovetail shaped notches 7 inches (175 mm) deep.
- b. Strips, not less than 1-1/2 inches (38 mm) thick and 10 inches (250 mm) wide, with dimpled surface designed to catch mortar droppings and prevent weep holes from being clogged with mortar.
- c. Sheets or strips full depth of cavity and installed to full height of cavity.

2. Products:

- a. Advanced Building Products Inc.; Mortar Break.
- b. Archovations, Inc.; CavClear Masonry Mat.
- c. Dayton Superior Corporation, Dur-O-Wal Division; Polytite MortarStop.
- d. Mortar Net USA, Ltd.; Mortar Net.

## 2.11 INSULATION

- A. Loose-Granular Fill Insulation: Perlite complying with ASTM C 549, Type II (surface treated for water repellency and limited moisture absorption) or Type IV (surface treated for water repellency and to limit dust generation).
- B. Molded-Polystyrene Insulation Units: Rigid, cellular thermal insulation formed by the expansion of polystyrene-resin beads or granules in a closed mold to comply with ASTM C 578, Type I. Provide specially shaped units designed for installing in cores of masonry units.

1. Products:

- a. Concrete Block Insulating Systems; Korfil.
- b. Shelter Enterprises Inc.; Omni Core.

- C. Extruded-Polystyrene Board Insulation: ASTM C 578, Type IV, closed-cell product extruded with an integral skin.
- D. Polyisocyanurate Board Insulation: ASTM C 1289, Type I (aluminum-foil-faced), Class 2 (glass-fiber-reinforced).

## 2.12 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains from new masonry without damaging masonry. Use product approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

1. Manufacturers:
  - a. Diedrich Technologies, Inc.
  - b. EaCo Chem, Inc.
  - c. ProSoCo, Inc.

## 2.13 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Limit cementitious materials in mortar for exterior and reinforced masonry to portland cement and lime.
3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

- B. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification.

- C. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification.

1. For masonry below grade or in contact with earth, use Type M.
2. For reinforced masonry, use Type S.
3. For mortar parge coats, use Type S.
4. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
5. For interior non-load-bearing partitions, Type O may be used instead of Type N.

- D. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.

1. Pigments shall not exceed 10 percent of portland cement by weight.
2. Pigments shall not exceed 5 percent of masonry cement by weight.

- E. Grout for Unit Masonry: Comply with ASTM C 476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
2. Provide grout with a slump of 8 to 11 inches (200 to 280 mm) as measured according to ASTM C 143/C 143M.

- F. Epoxy Pointing Mortar: Mix epoxy pointing mortar to comply with mortar manufacturer's written instructions.

## PART 3 – EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Use full-size units without cutting if possible. If cutting is required, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- B. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
- C. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.
- D. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
  - 1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
  - 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.

### 3.2 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.
- C. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- D. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.
- E. Fill cores in hollow concrete masonry units with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.

### 3.3 MORTAR BEDDING AND JOINTING

- A. Lay hollow brick and concrete masonry units as follows:

1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
  2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
  3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
  4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Lay structural-clay tile as follows:
1. Lay vertical-cell units with full head joints, unless otherwise indicated. Provide bed joints with full mortar coverage on face shells and webs.
  2. Lay horizontal-cell units with full bed joints, unless otherwise indicated. Keep drainage channels, if any, free of mortar. Form head joints with sufficient mortar so excess will be squeezed out as units are placed in position.
  3. Maintain joint thicknesses indicated except for minor variations required to maintain bond alignment. If not indicated, lay walls with 1/4- to 3/8-inch- (6- to 10-mm-) thick joints.
  4. Where epoxy-mortar pointed joints are indicated, rake out setting mortar to a uniform depth of 1/4 inch (6 mm) and point with epoxy mortar.
- D. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.
- E. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint), unless otherwise indicated.

### 3.4 COMPOSITE MASONRY

- A. Bond wythes of composite masonry together using one of the following methods:
1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 4.5 sq. ft. (0.42 sq. m) of wall area spaced not to exceed 36 inches (914 mm) o.c. horizontally and 16 inches (406 mm) o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches (305 mm) of openings and space not more than 36 inches (915 mm) apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches (610 mm) o.c. vertically.
  2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
    - a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.
    - b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement with continuous horizontal wire in facing wythe attached to ties.

- B. Collar Joints: Solidly fill collar joints by parging face of first wythe that is laid and shoving units of other wythe into place.
- C. Collar Joints in Clay Tile Masonry: After each course is laid, fill the vertical, longitudinal joint between wythes solidly with mortar at exterior walls, and except cavity walls.
- D. Corners: Provide interlocking masonry unit bond in each wythe and course at corners, unless otherwise indicated.
- E. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:
  - 1. Provide individual metal ties not more than 8 inches (203 mm) o.c.
  - 2. Provide continuity with masonry joint reinforcement by using prefabricated T-shaped units.
  - 3. Provide rigid metal anchors not more than 24 inches (610 mm) o.c. If used with hollow masonry units, embed ends in mortar-filled cores.

### 3.5 CAVITY WALLS

- A. Bond wythes of cavity walls together using one of the following methods:
  - 1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 4.5 sq. ft. (0.42 sq. m) of wall area spaced not to exceed 36 inches (914 mm) o.c. horizontally and 16 inches (406 mm) o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches (305 mm) of openings and space not more than 36 inches (915 mm) apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches (610 mm) o.c. vertically.
  - 2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
    - a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.
    - b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement with continuous horizontal wire in facing wythe attached to ties.
    - c. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type reinforcement with continuous horizontal wire in facing wythe attached to ties to allow for differential movement regardless of whether bed joints align.
  - 3. Masonry Veneer Anchors: Comply with requirements for anchoring masonry veneers.
- B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.

- C. Parge cavity face of backup wythe in a single coat approximately 3/8 inch (10 mm) thick. Trowel face of parge coat smooth.
- D. Coat cavity face of backup wythe to comply with Division 7 Section "Bituminous Dampproofing."
- E. Installing Cavity-Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches (300 mm) o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit insulation between wall ties and other confining obstructions, with edges butted tightly. Press units firmly against inside wythe of masonry.

### 3.6 MASONRY-CELL INSULATION

- A. Pour granular insulation into cavities to fill void spaces. Maintain inspection ports to show presence of insulation at extremities of each pour area. Close the ports after filling has been confirmed. Limit the fall of insulation to 1 story in height, but not more than 20 feet (6 m).
- B. Install molded-polystyrene insulation units into masonry unit cells before laying units.

### 3.7 MASONRY JOINT REINFORCEMENT

- A. General: Install in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).
- B. Interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.

### 3.8 ANCHORING MASONRY TO STRUCTURAL MEMBERS

- A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
  - 1. Provide an open space not less than 1/2 inch (13 mm) 1 inch (25 mm) in width between masonry and structural member, unless otherwise indicated.
  - 2. Anchor masonry to structural members with anchors embedded in masonry joints and attached to structure.
  - 3. Space anchors as indicated, but not more than 24 inches (610 mm) o.c. vertically and 36 inches (915 mm) o.c. horizontally.

### 3.9 ANCHORING MASONRY VENEERS

- A. Anchor masonry veneers to concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:
  - 1. Fasten screw-attached anchors through sheathing to wall framing with metal fasteners of type indicated. Use two fasteners.

2. Embed tie sections in masonry joints. Provide not less than 2 inches (50 mm) of air space between back of masonry veneer and face of sheathing.
3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
4. Space anchors as indicated, but not more than 16 inches (406 mm) o.c. vertically and 32 inches (813 mm) o.c. horizontally with not less than 1 anchor for each 3.5 sq. ft. (0.33 sq. m) of wall area. Install additional anchors within 12 inches (305 mm) of openings and at intervals, not exceeding 36 inches (914 mm), around perimeter.

### 3.10 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.
- B. Install flashing as follows, unless otherwise indicated:
  1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing as recommended by flashing manufacturer.
  2. At lintels and shelf angles, extend flashing a minimum of 6 inches (150 mm) into masonry at each end. At heads and sills, extend flashing 6 inches (150 mm) at ends and turn up not less than 2 inches (50 mm) to form end dams.
  3. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall and adhere flexible flashing to top of metal drip edge.
  4. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall and adhere flexible flashing to top of metal flashing termination.
- C. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
  1. Use vent products to form weep holes.
  2. Space weep holes 24 inches (600 mm) o.c., unless otherwise indicated.
  3. Cover cavity side of weep holes with plastic insect screening at cavities insulated with loose-fill insulation.
- D. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in Part 2 "Miscellaneous Masonry Accessories" Article.
- E. Install vents in head joints in exterior wythes at spacing indicated. Use vent products to form vents.
  1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.



### 3.11 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
  - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
  - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
  - 1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
  - 2. Limit height of vertical grout pours to not more than 60 inches (1520 mm).

### 3.12 FIELD QUALITY CONTROL

- A. Inspectors: Owner will engage qualified independent inspectors to perform inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform inspections.
  - 1. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.
- ~~B. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections indicated below and prepare test reports:
  - 1. Payment for these services will be made from Testing and Inspecting Allowance, as authorized by Change Orders.~~
- ~~C. Testing Frequency: One set of tests for each 5000 sq. ft. (465 sq. m) of wall area or portion thereof.~~
- D. Clay Masonry Unit Test: For each type of unit provided, per ASTM C 67.
- E. Concrete Masonry Unit Test: For each type of unit provided, per ASTM C 140.
- F. Mortar Test (Property Specification): For each mix provided, per ASTM C 780. Test mortar for mortar air content and compressive strength.
- G. Grout Test (Compressive Strength): For each mix provided, per ASTM C 1019.

### 3.13 PARGING

- A. Parge exterior faces of below-grade masonry walls, where indicated, in 2 uniform coats to a total thickness of 3/4 inch (19 mm) with a steel-trowel finish. Form a wash at top of parging and a cove at bottom. Damp-cure parging for at least 24 hours and protect parging until cured.

### 3.14 CLEANING

- A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
  - 1. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
  - 2. Protect adjacent surfaces from contact with cleaner.
  - 3. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
  - 4. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
  - 5. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
  - 6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

### 3.15 MASONRY WASTE DISPOSAL

- A. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
  - 1. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.
  - 2. Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION

(NOT USED)

## SECTION 04 72 00 – CAST STONE

### PART 1 – GENERAL

#### 1.1 DESCRIPTION

- A. This section specifies manufactured concrete units to simulate a natural stone.
- B. Installation of cast stone units.

#### 1.2 RELATED WORK

- A. Setting and pointing mortar: Section 04 20 00 UNIT MASONRY

#### 1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
- B. Samples:
  - 1. Cast stone, sample panel, size 100 by 300 by 300 mm (4 by 12 by 12 inches) each color and finish.
  - 2. Show finish on two 100 mm (4-inch) edges and 300 by 300 mm (12 by 12 inch) surface.
- C. Shop Drawings:
  - 1. Cast stone showing exposed faces, profiles, cross sections, anchorage, reinforcing, jointing, sizes and sealant.
  - 2. Setting drawings with setting mark.
  - 3. Indicate approximate weight of unit.
- D. Certificates: Test results indicating that the cast stone meets specification requirements and proof of plant certification.
- E. Submit manufacturers test results of cast stone previously made by manufacturer.
- F. Laboratory Data: Description of testing laboratories facilities and qualifications of its principals and key personnel.
- G. List of jobs furnished by the manufacturer, which were similar in scope and at least three (3) years of age.
- H. Cone Mix design: Include items relative to design:
  - 1. Aggregate source, type, uniformity
  - 2. Cement source, type, uniformity of color
  - 3. Cement content of mix
  - 4. Water to cement ratio

5. Ad mixtures: Type and amounts
6. Compressive strengths at form removal 7 days + 28 days

#### 1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Store cast stone under waterproof covers on planking clear of ground.
- B. Protect from handling, dirt, stain, water, cracking, dipping and warping damage.
- C. Mark production units with the identification marks as shown on the shop drawings.
- D. Package units and protect them from staining or damage during shipping and storage.
- E. Provide an itemized list of product to support the bill of lading.
- F. Damaged units shall be rejected

#### 1.5 WARRANTY

Warranty exterior masonry walls against moisture leaks, any defects and subject to terms of "Warranty of Construction" article in Section 00 72 00, GENERAL CONDITIONS, except that warranty period shall be five years.

#### 1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
- B. Cast Stone Institute Technical Manual 04720 and Cast Stone Institute standard specification (2004).
- C. American Society for Testing and Materials (ASTM):
  - A167-99 (2004).....Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
  - A185-02 .....Steel, Welded Wire Fabric, Plain for Concrete
  - A615/A615M-04b.....Deformed and Plain Billet-Steel Bars for Concrete
  - C33-03 .....Concrete Aggregates
  - C150-04ae1 .....Portland Cement
  - C503-03 .....Marble Dimension Stone (Exterior)
  - C568-03 .....Limestone Dimension Stone
  - C615-03 .....Granite Dimension Stone
  - C616-03 .....Quartz-Based Dimension Stone
  - C979-99 .....Pigments for Integrally Colored Concrete
  - C1194-03 .....Compressive Strength of Architectural Cast Stone
  - C1195-03 .....Absorption of Architectural Cast Stone
  - C3164-03 .....Standard Specification for Architectural Cast Stone.
  - D2244-02e1 .....Test method for calculation of color differences from instrumentally measured color coordinates.

## 1.7 QUALITY ASSURANCE

- A. Manufacturer: Must have ten (10) years minimum continuous operating experience and have facilities for manufacturing cast stone as described herein. Manufacturer shall have sufficient plant facilities to produce the shapes, quantities and size of cast stone required in accordance with the project schedule.
- B. Manufacturer: Must be a member of the Cast Stone Institute.
- C. Manufacturer: Must have a certified plant (certification by the Cast Stone Institute).
- D. Stone setter: Must have ten (10) years experience setting cast or natural building stone.
- E. Testing: One (1) sample from production units may be selected at random from the field for each 500 cubic feet (14 m<sup>3</sup>) delivered to the job:
  - 1. Three (3) field cut cube specimens from each of these sample shall have an average minimum compressive strength of not less than 85% with no single specimen testing less than 75% of design strength as allowed by ACI 318
  - 2. Three (3) field cut cube specimens from each of these samples shall have an average maximum cold-water absorption of 6%.
  - 3. Field specimens shall be tested in accordance with ASTM C 1194 and C 1195.
  - 4. Manufacturer shall submit a written list of projects similar and at least three (3) years of age, along with owner, architect and contractor references.

## 1.8 MANUFACTURING TOLERANCES

- A. Cross section dimensions shall not deviate by more than + 1/8 in. (3 mm) from approved dimension.
- B. Length of units shall not deviate by more than length /360 or + 1/8 in. (3mm), whichever is greater, not to exceed + 1/4 in (6 mm). Maximum length of any unit shall not exceed 15 times the average thickness of such unit unless otherwise agreed by the manufacturer.
- C. Warp bow or twist of units shall not exceed length/360 or + 1/8 in. (3 mm), whichever is greater.
- D. Location of dowel holes, anchor slots, flashing grooves, false joints and similar features – On formed side's o unit, 1/8 in (3 mm), on unformed sides of unit, 3/8 in (9 mm) maximum deviation.
- E. Width of joints and alignments with other faces and units shall not deviate by more than ±1/8" (3mm)

## 1.9 MOCK-UP

Provide full size unit(s) for use in construction of sample wall. The mock-up becomes the standard of workmanship for the project.

## PART 2 – PRODUCTS

### 2.1 ARCHITECTURAL CAST STONE

- A. Comply with ASTM C 1364
- B. Physical properties: Provide the following:
  - 1. Compressive Strength – ASTM C 1194: 6,500 psi (45 Mpa) minimum for products at 28 days.
  - 2. Absorption – ASTM C 1195: 6% maximum by the cold water method, or 10% maximum by the boiling method for products as 28 days.
  - 3. Air Content – ASTM C173 or C231, for wet cast product shall be 4-8% for units exposed to freeze-thaw environments. Air entrainment is not required for vibrant dry tamp (VDT) products.
  - 4. Freeze thaw - ASTM C 1364L The cumulative percent weight loss (CPWL) shall be less than 5% after 300 cycles of freezing and thawing.
  - 5. Linear Shrinkage - ASTM C 426L Shrinkage shall not exceed 0.065%.
- C. Job site testing – One (1) sample from production units may be selected at random from the field for each 500 cubic feet (14m<sup>3</sup>) delivered to the job site:
  - 1. Three (3) field cut cube specimens from each of these samples shall have an average minimum compressive strength of not less than 85% with no single specimen testing less than 75% of design strength as allowed by ACI 318.
  - 2. Three (3) field cut cube specimens from each of these samples shall have an average maximum cold-water absorption of 6%.
  - 3. Field specimens shall be tested in accordance with ASTM C 1194 and C 1195.

### 2.2 RAW MATERIALS

- A. Portland cement – Type I or Type III, white and/or grey, ASTM C 150. Use only one brand of cement for all cast units.
- B. Coarse aggregates – Granite, quartz or limestone, ASTM C 33, except for gradation, and are optional for the vibrant dry tamp (VDT) casting method.
- C. Fine aggregates – Manufactured or natural sands, ASTM C 33, except for gradation.
- D. Colors – Inorganic iron oxide pigments, ASTM C 979 except that carbon black pigments shall not be used.
- E. Admixtures- Comply with the following:
  - 1. ASTM C 260 for air-entraining admixtures.
  - 2. ASTM C 494/C 495 M Types A-G for water reducing, retarding, accelerating and high range admixtures.
  - 3. Other admixtures: integral water repellents and other chemicals, for which no ASTM Standard exists, shall be previously established as suitable for use in concrete by proven field performance or through laboratory testing.

4. ASTM C 618 mineral admixtures of dark and variable colors shall not be used in surfaces intended to be exposed to view.
5. ASTM C 989 granulated blast furnace slag may be used to improve physical properties. Tests are required to verify these features.

F. Water – Potable

G. Reinforcing bars:

1. ASTM A 615/A 615M. Grade 40 or 60 steel galvanized or epoxy coated when cover is less than 1.5 in. (37 mm).
2. Welded Wire Fabric: ASTM A 185 where applicable for wet cast units.

- H. All anchors, dowels and other anchoring devices and shims shall be standard building stone anchors commercially available in a non-corrosive material such as zinc plated, galvanized steel, brass, or stainless steel Type 302 or 304.

### 2.3 COLOR AND FINISH

- A. Match sample on file in architect's office.
- B. All surfaces intended to be exposed to view shall have a fine-grained texture similar to natural stone, with no air voids in excess of 1/32 in. (0.8 mm) and the density of such voids shall be less than 3 occurrences per any 1 in<sup>2</sup> (25mm<sup>2</sup>) and not obvious under direct daylight illumination at a 5 ft. (1.5m) distance.
- C. Units shall exhibit a texture approximately equal to the approved sample when viewed under direct daylight illumination at a 10 ft (3m) distance.
- D. ASTM D 2244 permissible variation in color between units of comparable age subjected to similar weathering exposure.
- E. Total color difference – not greater than 6 units.
- F. Total hue difference-not greater than 2 units.
- G. Minor chipping resulting from shipment and delivery shall not be grounds for rejection. Minor chips shall not be obvious under direct daylight illumination from a 20-ft (6m) distance.
- H. The occurrence of crazing or efflorescence shall not constitute a cause for rejection.
- I. Remove cement film, if required, from exposed surfaces prior to packaging for shipment.

### 2.4 REINFORCING

- A. Reinforce the units as required by the drawings and for safe handling and structural stress.
1. Minimum reinforcing shall be 0.25 percent of the cross section area.



- B. Reinforcement shall be non-corrosive where faces exposed to weather are covered with less than 1.5in. (38 mm) of concrete material. All reinforcement shall have minimum coverage of twice the diameter of the bars.
- C. Minor chipping resulting from shipment and delivery shall not be grounds for rejection. Minor chips shall not be obvious under direct daylight illumination from a 20-ft (6m) distance.
- D. The occurrence of crazing or efflorescence shall not constitute a cause for rejection.
- E. Remove cement film, if required, from exposed surface prior to packaging for shipment.

## 2.5 CURING

Cure units in a warm curing chamber 1000 F (37.80 C) at 95 percent relative humidity for approximately 12hours, or cure in a 95 percent moist environment at a minimum 700F (21.10C) for 16 hours after casting. Additional yard curing at 95 percent relative humidity shall be 350-degree-days (i.e. 7 days @ 500F (100C) or 5 days @ 700F (210C) prior to shipping. Form cured units shall be protected from moisture evaporation with curing blankets or curing compounds after casting.

## 2.6 SEALANT:

Seal all cast store pieces with Prosoc SLX100 water and stain repellent. Utilize as described by manufacturer.

## PART 3 – EXECUTION

### 3.1 EXAMINATION

Installing contractor shall check cast stone materials for fit and finish prior to installation. Do not set unacceptable units.

### 3.2 SETTING TOLERANCES

- A. Comply with Cast Stone Institute<sup>SM</sup> Technical Manual.
- B. Set stones 1/8 in. (3 mm) or less, within the plane of adjacent units.
- C. Joints, plus – 1/6 in. (1.5 mm), minus – 1/8 in. (3 mm).

### 3.3 JOINTING

- A. Joint size:
  - 1. At stone/brick joints 3/8 in. (9.5 cm).
  - 2. At stone/stone joints in vertical position 1/4 in. (6 mm) (3/8 in. (9.5 mm) optional).
  - 3. Stone/stone joint exposed on top 3/8 in. (.5 mm).
- B. Joint Materials:

1. Mortar, Type N, ASTM C 270.
2. Use a full bed of mortar at all bed joints.
3. Flush vertical joints full with mortar.
4. Leave all joints with exposed tops or under relieving angles open for sealant.
5. Leave head joints in coping and projecting components open for sealant.

B. Location of joints:

1. As shown on shop drawings.
2. At control and expansion joints unless otherwise shown.

### 3.4 SETTING

- A. Drench units with clean water prior to setting.
- B. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.
- C. Set units in full bed of mortar, unless otherwise detailed.
- D. Rake mortar joints 3/4 in. (18 mm) in. for pointing.
- E. Remove excess mortar from unit faces immediately after setting.
- F. Tuck point unit joints to a slight concave profile.

### 3.5 JOINT PROTECTION

- A. Comply with requirements of Section 07 92 00.
- B. Prime ends of units, insert properly sized backing rod and install required sealant.

### 3.6 REPAIR AND CLEANING

- A. Repair chips with touchup materials furnished by manufacturer.
- B. Saturate units to be cleaned prior to applying an approved masonry cleaner.
- C. Consult with manufacturer for appropriate cleaners.

### 3.7 SEALING

Before applying, read "Preparation" and "Safety Information" sections in the Manufacturer's Product Data Sheet for SLX100 Water & Oil Repellent. Refer to the Product Data Sheet for additional information about application of SLX100 Water & Oil Repellent. Do not dilute or alter.

Vertical Surfaces:

1. Apply protective treatment in a single, saturating application. Use enough to thoroughly wet the surface and create a slight rundown below the spray pattern. Apply uniformly. Don't over apply.
2. Brush heavy runs and drips thoroughly into the surface.

Horizontal Surfaces:

3. Apply protective treatment in a single application. Use enough material to keep the surface wet for about a minute before penetrating.
  4. Broom out all puddles thoroughly until they completely penetrate the surface.
  5. Wipe down excess with a clean, absorbent towel.
- Porous Surfaces:
6. Two applications of protective treatment will provide superior protection. Apply the second coat within a few minutes after the first coat has penetrated and appears dry.
- Note: Protect treated surfaces from rain and pedestrian & vehicular traffic for 4 hours.

### 3.7 INSPECTION AND ACCEPTANCE

Inspect finished installation according to Bulletin #36 published by the Cast Stone Institute.

END OF SECTION

## SECTION 31 20 00 EARTH MOVING

### PART 1 – GENERAL

#### 1.1 DESCRIPTION OF WORK:

##### A. Work Includes:

The work of this section consists of excavating, filling and grading as indicated or required.

##### B. Definitions:

1. Satisfactory soil material: Clean subsoil, free from debris, roots, topsoil, frozen material and rock larger than ½ cu. ft. Fill material shall be tested and approved by Testing Agency for degree of compaction required by its intended use.
2. Unsuitable soil materials: Soil materials not capable of being compacted to density required, mass or trench rock material, debris and organic material.
3. Mass rock: Material which is more than one cu. yd. in volume and cannot be excavated with a single-toothed ripper.
4. Trench rock: Material which is more than ½ cu. yd. in volume and cannot be excavated by the equivalent of a Caterpillar 215 backhoe having a bucket curling force of 18,300 lbs.
5. Muck: Wet organic material which will not support a light crawler tractor and requires removal by power shovels or draglines.

#### 1.2 JOB CONDITION:

A. Verify existing grades and lay out grade stakes for building and appurtenances. If existing grades are at variance with drawings, notify Architect and receive instructions prior to proceeding.

##### C. Protection:

1. Protect benchmarks and monuments; if disturbed or destroyed, replace in original position.
2. Protect existing facilities and adjacent property. Prevent ponding or washing of water on site and on adjacent property. Erect and maintain straw bale barricades and retention pond as required by local ordinances.
3. Protect areas outside limits of construction from encroachment by construction personnel or equipment, regardless of property ownership. Access shall be by specific, written permission or easement only.

- C. Utilities: Protect active utilities and remove or relocate as shown. Active utilities encountered but not shown on drawings shall be removed or relocated in accord with Architects written instructions and Contract Sum will be adjusted in accord with Contract Conditions.
- 1.3 TESTING:
- A. Soil testing shall be performed by an independent Testing Agency selected and paid by Contractor, acceptable by Architect. Costs for testing shall be included in contract sum.
  - B. Testing Agency shall perform the following testing:
    - 1. Compaction tests in accord with ASTM D698-78.
    - 2. Inspection and testing subgrades and proposed fill materials.
  - C. Contractors duties relative to testing include:
    - 1. Provide representative fill soil samples to Testing Agency for test purposes. Provide 50lb. Samples of each fill soil.
    - 2. Advise Testing Agency sufficiently in advance of operations to allow for completion of quality tests and for assignment of personnel.
  - D. Contractor shall be responsible for paying costs of additional testing beyond scope of that required and for retesting if initial tests reveal nonconformance with specified requirements.
- 1.4 QUALITY CRITERIA:
- A. Applicable standards: Standards of the American Society for Testing and Materials (ASTM), as reference herein.

## PART 2 - PRODUCTS

- 2.1 MATERIALS:
- A. Satisfactory soil materials as heretofore defined.

## PART 3 - EXECUTION

- 3.1 EXCAVATION:
- A. Excavation shall be on an unclassified basis, including all materials encountered, at no additional cost to the Owner. Excavation shall include that to establish grades indicated on the drawings and for utilities, structures and appurtenances.

- B. Excavate to lines and levels indicated. Provide space for foundation work and inspection. Cut excavations clean with level bottoms. Where changes in levels occur, provide vertical steps in horizontal runs.
  - C. If soil conditions permit, cut footing trenches to exact size of footing and omit forms. Notify Architect if earth of doubtful bearing is encountered.
  - D. If excavations are by error carried deeper than shown, additional depth shall be filled with concrete of class specified for foundations at no additional cost.
  - E. Maintain excavations free of surface water. Provide pumps and well points if required to drain excavations. Provide and maintain temporary drainage ditches as required.
- 3.2 FILL AND BACKFILL:

- A. Provide satisfactory soil material to perform earthwork operations indicated, included filling and backfilling to bring grade to elevations indicated. Additional fill material required as a result of existing unsuitable soil material will be paid for as additional work in accord with Contract Conditions.
- B. Preparation of surfaces to receive fill:
  - 1. Remove vegetation, unsuitable soil materials, obstructions and deleterious materials from ground surface prior to placement of fills. Break up slope surfaces steeper than one vertical to four horizontal so that fill material will bond with existing surface.
  - 2. Proofroll subgrades prior to placing fill using loaded 10-ton dump truck or similar weight construction equipment. Proofrolling shall be under the surveillance of Testing Agency.
  - 3. When existing ground surface has a density less than specified for a particular area classification, break up the ground surface, pulverize, moisture condition to optimum moisture content, and compact to required depth and percentage of maximum density.
- C. Placement and compaction: Place fill materials in layers not more than 6" in loose depth. Place no rocks exceeding 3" diameter in top 1'-0" of fill. Before compaction, moisten or aerate each layer to provide the optimum moisture content. Compact each layer to specified percentage of maximum density for area classification. Place no backfill or fill material on surfaces that are muddy, frozen or contain frost or ice.

3.3 COMPACTION:

- A. Perform compaction of soil materials for fills using mechanical soil compaction equipment for type and size materials to be compacted. Hand compact materials in areas inaccessible to machinery. Compaction to be 95% Standard Proctor.
- B. Moisture control: Where subgrade or soil layer must be moisture conditioned before compaction, apply water to surface of subgrade or soil layer. Scarify and air-dry soil material that is too wet to permit compaction to specified density.

- C. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread where directed by Architect and permitted to dry. Assist drying by discing, harrowing or pulverizing, until moisture content is reduced to satisfactory value, as determined by moisture-density relation tests. When accepted by Architect, soil material may be used in compacted backfill or fill.
- 3.4 ROUGH GRADING:
- A. Grade areas to lines and elevations indicated, including adjacent transition areas. Smooth finished surface within specified tolerances, compact and bring to uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

END OF SECTION 02200

## SECTION 32 13 13.26 - COLORED CONCRETE PAVING

### PART 1- GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Integrally Colored Concrete sidewalks and curbs.
2. Curing of Integrally Colored Concrete: Exterior

##### B. Related Sections:

1. Section 32 13 73 – Concrete Paving Joint Sealants.

#### 1.2 REFERENCES

Other useful publications about colored concrete include:  
PCA PA124 - Finishing Concrete Slabs with Color and Texture.  
PCA SP021 - Color and Texture in Architectural Concrete.

##### A. American Concrete Institute (ACI):

1. ACI 301 - Structural Concrete for Buildings.
2. ACI 305R - Hot Weather Concreting.
3. ACI 306R - Cold Weather Concreting.
4. ACI 316 - Recommendations for Construction of Concrete Pavements and Bases.
5. ACI 302 IR – Recommended Practice for Concrete Floor and Slab Construction

##### B. American Society for Testing and Materials (ASTM):

1. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.
2. ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete.
3. ASTM C494 – Standard Specification for Chemical Admixtures for Concrete

##### C. American Association of State Highway and Transportation Officials (AASHTO):

1. AASHTO M194 – Chemical Admixtures

#### 1.3 SUBMITTALS

##### A. Contractor shall submit specified manufacturer's complete technical data sheets for the following:

1. Colored Admixture
2. Curing compounds



- B. Contractor shall construct an on-site mockup for Owner and Consultant approval.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer of specified colored admixture and curing compound shall have a minimum 10 years experience in the production of the specified products.
- B. Contractor Qualifications: Concrete work shall be performed by firm with 5 years experience with work of similar scope and quality.
- C. Perform work in accordance with ACI 301 and ACI 316.
- D. Conform to ACI 305 during hot weather.
- E. Conform to ACI 306 during cold weather.
- F. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout Project.
- G. Colored Concrete Mock-Up & Field Samples:
  - 1. Provide at location on Project selected by Owner, place and finish 4 x 4 feet (1.2 x 1.2m) area for owner review and approval.
  - 2. For accurate color, the quantity of concrete mixed to produce the sample should not be less than three (3) cubic yards (not less than 1/3 the capacity of the mixing drum on the ready-mix truck) and should always be in full cubic yard increments. Excess material shall be discarded according to local regulations.
  - 3. Construct sample-using processes and techniques intended for use on permanent work, including curing procedures. Include samples of control, construction, and expansion joints in sample panels. Mock-up & Field sample shall be produced by the individual workers who will be performing the work for the project.
  - 4. Retain samples of cements, sands, aggregates and color additives used in mock-up for comparison with materials used in remaining work.
  - 5. Accepted mock-up & field sample provides visual standard for work of Section.
  - 6. Mock-up & Field sample shall remain through completion of the work for use as a quality standard for finished work.

#### 1.5 DELIVERY, STORAGE & HANDLING

- A. Colored Admixture: Comply with manufacturer's instructions. Deliver colored admixtures in original, unopened packaging. Store in dry conditions.

#### 1.6 PROJECT CONDITIONS

- A. Colored Concrete Environmental Requirements:
  - 1. Schedule placement to minimize exposure to wind and hot sun before curing materials is applied.
  - 2. Avoid placing concrete if rain, snow, or frost is forecast within 24 hours. Protect fresh concrete from moisture and freezing.

3. Professional practices as described in ACI 305R Hot Weather Concreting and ACI306R Cold Weather Concreting should be followed

B. Schedule delivery of concrete to provide consistent mix times from batching until discharge. Mix times shall meet manufacturer's written recommendations.

## PART 2 - PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURERS

A. Colored Admixture for Integrally Colored Concrete:

1. Manufacturer:

a. L.M. SCOFIELD COMPANY, Douglasville, Georgia (800) 800-9900

2. Materials:

a. Admixture shall be a colored, water-reducing, admixture containing no calcium chloride with coloring agents that are limeproof and UV resistant.

b. Colored admixture shall conform to the following:

1) ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete.

2) ASTM C494 – Standard Specification for Chemical Admixtures for Concrete

3) AASHTO M194 – Chemical Admixtures

CHROMIX® Admixtures as manufactured by the L.M. SCOFIELD COMPANY, Douglasville, Georgia, are considered to conform to the requirements of this specification.

B. Curing Compound for Integrally Colored Concrete: Curing compound shall comply with ASTM C309 and be approved by color additive manufacturer for use with colored concrete.

1. Exterior Colored Concrete

a. Manufacturer:

1) L.M. SCOFIELD COMPANY, Douglasville, Georgia (800) 800-9900

b. Materials:

1) LITHOCHROME® COLORWAX as manufactured by the L.M. SCOFIELD COMPANY, Douglasville, Georgia shall be used to cure all exterior flatwork that will be allowed to cure naturally with only occasional maintenance.

C. Concrete Sealer for Integrally Colored Concrete:

1. Exterior Colored Concrete

a. Manufacturer:

1) L.M. SCOFIELD COMPANY, Douglasville, Georgia (800) 800-9900

b. Materials:

1) REPELLO as manufactured by the L.M. SCOFIELD COMPANY, Douglasville, Georgia shall be used to seal all exterior flatwork.

D. Joint sealants shall be color-matched to the concrete and specially formulated for high-performance in pedestrian and vehicular traffic areas.

1. Manufacturer:

- a. TREMCO
- b. Sika
- c. Sonnenborn
- d. Pecora Corporation

2. Materials:

- a. Dymonic FC manufactured by TREMCO
- b. Sikaflex -2c NS TG manufactured by Sika
- c. Sonneborn NP 2 manufactured by Sonneborn
- d. UNREXPAN NR 200 manufactured by Pecora

E. SUBSTITUTIONS: The use of any products other than those specified will be considered providing that the contractor requests its use in writing within fourteen (14) days prior to bid date. This request shall be accompanied by:

- 1. A certificate of compliance from the material manufacturer stating that the proposed products meet or exceed the requirements for this specification, including standards ASTM C979, ASTM C494 and ASSHTO M194.
- 2. Documented proof that the proposed material has a ten (10) year proven record of performance for staining concrete substrates, confirmed by at least five (5) local projects that the Architect can examine.

## 2.2 CONCRETE MIX DESIGN

- A. A recommended cement content of six (6) sacks per cubic yard of concrete shall be used.
- B. Slump of the concrete shall be consistent throughout the project at four (4) inches or less. At no time shall the slump exceed five (5) inches
- C. Calcium chloride shall not be added to the mix since it causes mottling and surface discoloration.
- D. Supplemental admixtures, such as additional water-reducing admixtures, water-proofing agents,

and super plasticizers shall not be used.

## 2.3 COLORS

### A. Concrete Color[s]:

1. Cement: Color shall be selected by Landscape Architect and approved by Owner.
2. Sand: Color shall be selected by Landscape Architect and approved by Owner.
3. Aggregate: Color shall be selected by Landscape Architect and approved by Owner.
4. Colored Admixture: to be selected by Landscape Architect and approved by Owner or owner approved alternate.
5. Curing Compound: Color to match colored concrete
6. Sealants: Siloxcene or Silocene penetrating sealer.

B. Colored admixture shall be added to the mix per manufacturer's written instructions in a pre-measured bag and shall not be added by weight of cement content.

## 2.4 CONCRETE FINISH RETARDER

A. Spray applied, film forming, water based top surface retarder, calibrated for specific sized aggregate and finish requirements.

1. Acceptable Materials: "Top Cast" by Grace Construction Products. Customer Service Center - 888-336-9303, [www.graceconstructionproducts.com](http://www.graceconstructionproducts.com) or contact Dennis Baugh Product Specialist W.R. Grace & Co. 62 Whittemore Ave., Cambridge, MA 02140. 800-354-5414 x 5439, 703-626-1577

B. Spray applied film forming protective coating for surfaces adjacent to retarded finish surfaces.

1. Acceptable Materials: "Face Off" by Grace Construction Products, [www.graceconstructionproducts.com](http://www.graceconstructionproducts.com), Grace Customer Service Center 888-336-9303 or Dennis Baugh Product Specialist W.R. Grace & Co. 62 Whittemore Ave., Cambridge, Ma 02140. 800-354-5414 x 5439, 703-626-1577

## PART 3 - EXECUTIONS

### 3.1 FINISHING

A. All surfaces shall be finished uniformly with the following finish:

1. Finish shall be exposed aggregate finish or specified otherwise on drawings.

### 3.2 CURING

A. Colored Concrete: Apply curing compound for colored concrete in accordance with manufacturer's instructions using manufacturer's recommended application techniques. Apply curing compound at consistent time for each pour to maintain close color consistency.

- C. Curing compound shall be the same color as the colored concrete and supplied by the same manufacturer of the colored admixture.
- D. Precautions must be taken in hot weather to prevent plastic cracking resulting from excessively rapid drying at the surface as described in CIP 5 Plastic Shrinkage Cracking published by the National Ready Mixed Concrete Association.
- E. The concrete shall never be covered with plastic sheeting.

### 3.3 TOLERANCES

- A. Minor variations in appearance of colored concrete, which are similar to natural variations in color and appearance of uncolored concrete, are acceptable.

END OF SECTION

## SECTION 32 14 00 - UNIT PAVING

### PART 1 - GENERAL

#### 1.1 DESCRIPTION

- A. This Section includes the following:
  - 1. Brick pavers sand set on aggregate sub-base
  - 2. Brick Pavers mortar set on conc. sub-slab
  - 3. Rough-stone pavers set in aggregate and mortar setting beds

#### 1.2 SUBMITTALS

- A. Product Data: For materials other than water and aggregates.
- B. Samples for unit pavers and joint materials.
- C. Sieve analyses for grading of bedding and joint sand shall be submitted.

#### 1.3 QUALITY ASSURANCE

- A. Mockups: Build mockups for each form and pattern of unit paver.
  - 1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
  - 2. Installation shall be by a contractor and crew with at least one year of experience in placing unit pavers on projects of similar nature or dollar cost.
  - 3. The Contractor shall conform to all local, state/provincial licensing and bonding requirements.

#### 1.4 PROJECT CONDITIONS

- A. Cold-Weather Protection: Do not use frozen materials or build on frozen sub grade or setting beds.
- B. Cold-Weather Requirements for Mortar and Grout: Heat materials to provide mortar and grout temperatures between 40 and 120 deg F (4 and 49 deg C). Protect unit paver work against freezing for 24 hours after installation.

#### 1.5 DELIVERY, STORAGE, HANDLING

- A. Unit pavers shall be delivered to the site in steel banded, plastic banded, or plastic wrapped cubes capable of transfer by fork lift or clamp lift. The pavers shall be unloaded at the job site in such a manner that no damage occurs to the product.
- B. Bedding and joint sand shall be covered with a secure waterproof covering to prevent exposure to rainfall or removal by wind.
- C. Delivery and paving schedules shall be coordinated in order to minimize interference with normal use of buildings adjacent to paving.

## PART 2 - PRODUCTS

### 2.1 CONCRETE UNIT PAVERS

- A. Refer to plans for unit paver information

### 2.2 NATURAL STONE UNIT PAVERS

- A. Bluestone Pavers
  1. Basis-of-Design Product: Pennsylvania Bluestone
  2. Finish: Thermal
  3. Thickness: 2" min. with square edges
  4. Size: 18" x 36" modular pieces
  5. Color: Full range without "brown" stones
- B. Bluestone Garden Steps
  1. Basis-of-Design Product: Pennsylvania Bluestone
  2. Finish: Thermal
  3. Thickness: 2" min. with square edges
  4. Size: as shown in detail
  5. Color: Full range without "brown" stones

### 2.3 ACCESSORIES

- A. Cork Joint Filler: Preformed strips complying with ASTM D 1752, Type II.
- B. Compressible Foam Filler: Preformed strips complying with ASTM D 1056, Grade 2A1.

### 2.4 AGGREGATE SETTING-BED MATERIAL

- A. The granular base material shall be graded in accordance with the requirements of ASTM D 2940, as presented in Table 2

TABLE 2:  
BASE MATERIAL GRADING REQUIREMENTS  
ASTM D 2940

Sieve Size	Percentages Passing
2 in. (50 mm)	100
1½ in. (37.5 mm)	95 to 100
¾ in. (19 mm)	70 to 92
3/8 in. (9.5 mm)	50 to 70
No. 4 (4.75 mm)	35 to 55
No. 30 (600 µm)	12 to 25
No. 200 (75 µm)	0 to 8 *

\* In order to prevent damage by frost heaving, it may be necessary to limit the percentages of material passing the No. 200 sieve to less than shown in the tables.

- B. Bedding sand as described in section 2.6
- C. Joint Sand as described in section 2.6
- D. Geotextile as required by Project's geotechnical report.

2.5 BITUMINOUS SETTING-BED MATERIALS

- A. Primer for Base: ASTM D 2028, cutback asphalt, grade as recommended by unit paver manufacturer.
- B. Fine Aggregate for Setting Bed: ASTM D 1073, No. 2 or No. 3.
- C. Asphalt Cement: ASTM D 3381, Viscosity Grade AC-10 or Grade AC-20.
- D. Neoprene-Modified Asphalt Adhesive: Paving manufacturer's standard adhesive consisting of oxidized asphalt combined with 2 percent neoprene and 10 percent long-fibered mineral fibers containing no asbestos.
- E. Joint Sand as described in section 2.6

2.6 BEDDING AND JOINT SAND

- A. The bedding and joint sand shall be clean, sub-angular to angular (depending on use), non-plastic, and free from deleterious or foreign matter. It can be natural or manufactured from crushed rock. Do not use limestone screenings or stone dust that do not conform to the grading requirements in Table 3. When unit pavers are subject to vehicular traffic, the sands shall be as hard as practically available and angular. Round to sub-angular sands such as Silica sands are not acceptable in areas receiving vehicular traffic. Contractor shall submit test data for Joint and Bedding sand to confirm.



- B. The bedding sand shall conform to the grading requirements of ASTM C 33 as shown in Table 3.

TABLE 3:  
 BEDDING SAND GRADING REQUIREMENTS

ASTM C 33	
Sieve Size	Percent Passing
3/8 in. (9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (600 µm)	25 to 60
No. 50 (300 µm)	10 to 30
No. 100 (150 µm)	2 to 10

- C. The joint sand shall conform to the grading requirements of ASTM C 144 as shown in Table 4 below:

TABLE 4:  
 JOINT SAND GRADING REQUIREMENTS

ASTM C 144		
	Natural Sand	Manufactured Sand
Sieve Size	Percent Passing	Percent Passing
No. 4 (4.75 mm)	100	100
No. 8 (2.36 mm)	95 - 100	95 to 100
No. 16 (1.18 mm)	70 - 100	70 to 100
No. 30 (600 µm)	40 - 75	40 to 75
No. 50 (300 µm)	10 - 35	20 to 40
No. 100 (150 µm)	2 - 15	10 to 25

No. 200 (75 $\mu$ m)	0	0 to 10
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## 2.7 DRAINAGE GEOTEXTILE

- A. Drainage Geotextile: Nonwoven needle-punched geotextile made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following:
1. Apparent Opening Size: No. 40 (0.425-mm) sieve, maximum; ASTM D 4751.
  2. Permittivity: 0.5 per second, minimum, ASTM D 4491.

## 2.8 MORTAR SETTING BED MATERIALS

- A. Hydrated Lime: ASTM C 207, Type S.
- B. Sand: ASTM C 144.
- C. Latex Additive: Water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by manufacturer for use with field-mixed Portland cement mortar bed, and not containing a retarder.
- D. Water: Potable.
- E. Portland Cement ASTM C-150, Type I or Type II

## 2.9 GROUT MATERIALS

- A. Non shrink type coarse sanded grout.
1. Product Type: Dry mix, containing Portland cement and silica sand, in dry, re-dispersible form, prepackaged with other dry ingredients.
  2. Grout Colors:
    - a. Brick-LaFarge Magnolia mason's mix
    - b. Bluestone-LaFarge 'Charcoal'
- B. Water: Potable.

## 2.10 BITUMINOUS SETTING-BED MIX

- A. Mix bituminous setting-bed materials at an asphalt plant in approximate proportion, by weight, of 7 percent asphalt cement to 93 percent fine aggregate unless otherwise indicated. Heat mixture to 300 deg F (149 deg C). PART 3 - EXECUTION

## 2.11 MORTAR & GROUT MIXES

- A. General: Comply with referenced standards and with manufacturers' written instructions. Discard mortars and grout if they have reached their initial set before being used.

- B. Polymer-Modified Bed Mix: Proportion and mix grout ingredients according to grout manufacturer's written instructions.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.
- B. Cut unit pavers with motor-driven masonry saw equipment to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible.
- C. Expansion and Control Joints: Provide foam filler as backing for sealant-filled joints. Install joint filler before setting pavers.
- D. Expansion and Control Joints: Provide joint filler at locations and of widths indicated. Install joint filler before setting pavers. Make top of joint filler flush with top of pavers.
- E. Provide edge restraints as indicated. Install edge restraints before placing unit pavers.

### 3.2 SITE PREPARATION

- A. The site must be stripped of all topsoil and other objectionable materials to the grades specified.
- B. All sub drainage of underground services within the pavement area must be completed in conjunction with sub grade preparation, and before the commencement of sub base construction.
- C. Note: All service trenches within the pavement area must be back filled to the sub-grade level with approved material placed in uniform lifts not exceeding 4 in. (200 mm) loose thickness. Each lift must be compacted to at least 100 percent Standard Proctor Density as specified in ASTM D 698.
- D. After trimming to the grades specified, the pavement is to be proof rolled to 100 percent Standard Proctor Density in the presence of the Consultant, with soft spots or localized pockets of objectionable material excavated and properly replaced with approved granular material.
- E. The sub grade shall be trimmed to within 0 to ½ in. (0 to 10mm) of the specified grades. The surface of the prepared sub grade shall not deviate by more than 3/8 in. (10mm) from the bottom edge of a 39 in. (1m) straight edge laid in any direction.
- F. The Contractor shall ensure that the prepared sub grade is protected from damage from inundation by surface water. No traffic shall be allowed to cross the prepared sub grade.

Repair of any damage resulting shall be the responsibility of the Contractor and shall be repaired.

- G. Under no circumstances shall further pavement construction proceed until the sub grade has been inspected by the Owner or the Consultant.

### 3.3 GRANULAR SUBBASE AND BASE INSTALLATION

- A. After proper construction of the edge restraints for the interlocking concrete pavement as per Section 3.5, and upon approval by the Consultant, aggregate base shall be placed in uniform lifts not exceeding 6 in. (150 mm) loose thickness. Each lift shall be compacted to at least 100 percent Standard Proctor Maximum Dry Density.
- B. Base thickness shall be per plans.
- C. The granular base shall be trimmed to within 0 to 3/8 in. (0 to 10 mm) of the specified grade. The surface of the prepared base shall not deviate by more than 3/8 in. (10 mm) from the bottom edge of a 10 ft. (3 m) long straight edge laid in any direction.
- D. The upper surface of the base shall be sufficiently well graded and compacted to prevent infiltration of the bedding sand into the base both during construction and throughout its service life. Segregated areas of the granular base shall be blended by the application of crushed fines that have been watered and compacted into the surface.
- E. Before commencing the placing of the sand bedding course and the placement of the unit pavers, the base shall be inspected by the Owner or the Consultant.

### 3.4 AGGREGATE SETTING BED APPLICATIONS

- A. Verify that sub-grade preparation, compacted density and elevations conform to the specifications.
- B. Note: For installation on a compacted aggregate base and soil sub-grade, the specifier should be aware that the top surface of the pavers may be 1/8 to 1/4 in. (3 to 6 mm) above the final elevation after compaction. This difference in initial and final elevation is to compensate for possible minor settling.
- C. Note: Compaction of the soil sub-grade to at least 95% Standard Proctor Density per ASTM D 698 is recommended. Higher density or compaction to ASTM D 1557 (Modified Proctor Density) may be necessary for areas subject to vehicular traffic. Stabilization of the sub-grade and/or base material may be necessary with weak or saturated sub-grade soils. The Architect/Engineer should inspect sub-grade preparation, elevations, and conduct density tests for conformance to specifications.
- D. Verify that geotextiles, if applicable, have been placed according to specifications and drawings.
- E. Verify that aggregate base materials, thickness, compaction, surface tolerances and elevations conform to the specifications.

- F. Note: Local aggregate base materials typical to those used for flexible pavements are recommended, or those conforming to ASTM D 2940. Compaction to not less than 95% Proctor Density in accordance with ASTM D 698 is recommended for pedestrian areas. Compaction to not less than 98% Modified Proctor Density according to ASTM D 1557 is recommended for vehicular areas.
- G. Note: The aggregate base should be spread and compacted in uniform layers not exceeding 6 in. (150 mm) thickness. Recommended base surface tolerance should be plus or minus 3/8 in. (10 mm) over a 10 ft. (3 m) straight edge. The Architect/Engineer should inspect geotextile materials and placement (if applicable), base preparation, surface tolerances, elevations, and conduct density tests for conformance to specifications.
- H. Note: Mechanical tampers (jumping jacks) are recommended for compaction of soil sub-grade and aggregate base around lamp standards, utility structures, building edges, curbs, tree wells and other protrusions. Areas not accessible to roller compaction equipment should be compacted to the specified density with mechanical tampers. CAUTION - Care shall be taken around the perimeters of excavations, buildings, curbs, etc. These areas are especially prone to consolidation and settlement. Wedges of backfill should not be placed in these areas. If possible, backfilling and compacting in these areas particularly should proceed in shallow lifts, parallel to the finished surface.
- I. Verify the proper installation of the concrete curbing, in terms of location, elevation, and adherence to the specifications.
- J. Verify that the base is dry, uniform, even and ready to support sand, pavers and imposed loads.
- K. Beginning of bedding sand and paver installation shall signify acceptance of base and edge restraints.

### 3.5 MORTAR SETTING BED APPLICATIONS

- A. Saturate concrete sub base with clean water several hours before placing setting bed. Remove surface water about one hour before placing setting bed.
- B. Apply mortar-bed bond coat over surface of concrete sub base about 15 minutes before placing setting bed. Limit area of bond coat to avoid its drying out before placing setting bed. Do not exceed 1/16-inch (1.6-mm) thickness for bond coat.
- C. Apply mortar bed over bond coat immediately after applying bond coat. Spread and screed to sub grade elevations required for accurate setting of pavers to finished grades indicated.
- D. Mix and place only that amount of mortar that can be covered with pavers before initial set. Cut back and discard setting-bed material that has reached initial set before placing pavers.
- E. Wet brick pavers before laying if the initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

- F. Place pavers before initial set of cement occurs. Immediately before placing pavers, apply uniform 1/16-inch- (1.5-mm-) thick, slurry bond coat to bed or to back of each paver.
- G. Tamp or beat pavers with a wooden block or rubber mallet to obtain full contact with setting bed and to bring finished surfaces within indicated tolerances. Set each paver in a single operation before initial set of mortar; do not return to areas already set or disturb pavers for purposes of realigning finished surfaces or adjusting joints.
- H. Spaced Joint Widths: Provide 1/2-inch (19-mm) nominal joint width with variations not exceeding plus or minus 1/16 inch (1.5 mm).
- I. Grout joints as soon as possible after initial set of setting bed.
  - 1. Force grout into joints, taking care not to smear grout on adjoining surfaces.
  - 2. Tool exposed joints slightly concave when thumbprint hard.
- J. Cure grout by maintaining in a damp condition for seven days, unless otherwise recommended by grout or liquid-latex manufacturer.
- K. Cleaning: Remove excess grout from exposed paver surfaces; wash and scrub clean.
  - 1. Remove temporary protective coating from brick pavers as recommended by protective coating manufacturer and as acceptable to unit paver and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

### 3.6 BITUMINOUS SETTING-BED APPLICATIONS

- A. Apply primer to concrete slab or binder course immediately before placing setting bed.
- B. Prepare for setting-bed placement by locating 3/4-inch- (19-mm-) deep control bars approximately 11 feet (3.3 m) apart and parallel to one another, to serve as guides for striking board. Adjust bars to subgrades required for accurate setting of paving units to finished grades indicated.
- C. Place bituminous setting bed where indicated, in panels, by spreading bituminous material between control bars. Spread mix at a minimum temperature of 250 deg F (121 deg C). Strike setting bed smooth, firm, even, and not less than 3/4 inch (19 mm) thick. Add fresh bituminous material to low, porous spots after each pass of striking board. After each panel is completed, advance first control bar to next position in readiness for striking adjacent panels. Carefully fill depressions that remain after removing depth-control bars.
- D. Roll setting bed with power roller to a nominal depth of 3/4 inch (19 mm). Adjust thickness as necessary to allow accurate setting of unit pavers to finished grades indicated. Complete rolling before mix temperature cools to 185 deg F (85 deg C).
- E. Apply neoprene-modified asphalt adhesive to cold setting bed by squeegeeing or troweling to a uniform thickness of 1/16 inch (1.6 mm). Proceed with setting of paving units only after adhesive is tacky and surface is dry to touch.

- F. Place pavers carefully by hand in straight courses, maintaining accurate alignment and uniform top surface. Protect newly laid pavers with plywood panels on which workers can stand. Advance protective panels as work progresses, but maintain protection in areas subject to continued movement of materials and equipment to avoid creating depressions or disrupting alignment of pavers. If additional leveling of paving is required, and before treating joints, roll paving with power roller after sufficient heat has built up in the surface from several days of hot weather.
- G. Joint Treatment: Place unit pavers with hand-tight joints. Fill joints by sweeping

### 3.7 PAVER RESTRAINTS

- A. Adequate edge restraint shall be provided along the perimeter of all paving as specified. The face of the edge restraint, where it abuts pavers, shall be vertical down to the sub base.
- B. All concrete edge restraints shall be constructed to dimensions and level specified and shall be supported on a compacted sub base not less than 6 in (150 mm) thick.
- C. Concrete used for the construction of edge restraints shall be air-entrained and have a compressive strength as specified. All concrete shall be in accordance with ASTM C 94 requirements.

### 3.8 PAVER INSTALLATION

- A. Spread the bedding sand evenly over the base course and screed to a nominal 1 in. (25 mm) thickness, not exceeding 1 ½ in. (40 mm) thickness. The screeded sand should not be disturbed. Sufficient sand shall be placed in order to stay ahead of the laid pavers. Do not use the bedding sand to fill depressions in the base surface.
- B. Note: The spread sand shall be carefully maintained in a loose condition, and protected against incidental compaction, both prior to and following screeding. Any incidentally compacted sand or screeded sand left overnight, shall be loosened before further paving units are placed. Sand shall be lightly screeded in a loose condition to the predetermined depth, only slightly ahead of the paving units. Under no circumstances shall the sand be screeded in advance of the laying face to an extent to which paving will not be complete on that day.
- C. Screed sand shall be fully protected against incidental compaction, including compaction by rain. Any screeded sand which is incidentally compacted prior to laying of the paving unit shall be removed and brought back to profile in a loose condition. Neither pedestrian nor vehicular traffic shall be permitted on the screeded sand.
- D. The Contractor shall screed the bedding sand using either an approved mechanical spreader (e.g.: an asphalt paver) or by the use of screed rails and boards.
- E. Initiation of paver placement shall be deemed to represent acceptance of the pavers.
- F. Pavers shall be free of foreign material before installation.

- G. Pavers shall be inspected for color distribution and all chipped, damaged or discolored pavers shall be replaced.
- H. The pavers shall be laid in the pattern(s) as shown on the drawings. String lines or chalk lines on bedding sand should be used to hold all pattern lines true.
- I. Joints between the pavers on average shall be between 1/16 in. and 1/8 in. (2 mm to 4 mm) wide. In order to maintain the desired pattern, joint spacing must be consistent. This spacing must also be provided for the first row abutting the edge restraint.
- J. Note: Installing pavers too tightly may lead to chipping at the edges.
- K. Gaps at the edges of the paved area shall be filled with cut pavers.
- L. Note: Units cut no smaller than one third of a whole paver are allowed along edges subject to vehicular traffic.
- M. Pavers to be placed along the edge shall be cut with a double blade paver splitter or masonry saw.
- N. Note: The use of infill concrete or discontinuities in patterns will not be permitted except along the outer pavement boundaries, adjacent to drains and manholes.
- O. Upon completion of cutting, the area must be swept clean of all debris to facilitate inspection and to ensure pavers are not damaged during compaction. (Debris or sand particles left on pavers which are being compacted can cause point loading which may chip, scrape or break the paver.)
- P. After sweeping and prior to compaction, the paved area must be inspected by the owner or consultant to ensure satisfactory color blending. Pavers can be moved easily at this time to achieve good color distribution.
- Q. Low amplitude, high frequency plate compactor shall be used to compact the pavers into the sand. The compactor shall transmit an effective force not less than 75 kN per square metre (1600 Lb/ft<sup>2</sup>) of plate area. The frequency of vibration shall be within the range of 75 to 100 Hz. Use Table 5 below to select size of compaction equipment:
- R. TABLE 5:
- S. PAVER THICKNESS AND REQUIRED MINIMUM COMPACTION FORCE

A. Paver Thickness	B. Compaction Force
C. 2 1/4 in.	D. 3000 lbs [13 kN]
E. 2 3/4 in.	G. 5000 lbs [22 kN]
F. 3 1/8 in.	

Note: Use of a urethane plate compactor pad is recommended to minimize any scuffing of the paving stone surface.



- T. The pavers shall be compacted to achieve consolidation of the sand bedding and brought to level and profile by not less than three passes. Initial compaction should proceed as closely as possible following the installation of the paving units and prior to the acceptance of any traffic or application of sweeping sand.
- U. Any units that are structurally damaged during compaction shall be immediately removed and replaced.
- V. Dry joint sand shall be swept into the joints until the joints are full. This will require at least two or three passes with the compactor. Do not compact within 3 ft. (1 m) of the unrestrained edges of the paving units.
- W. All work to within 3 ft. (1 m) of the laying face must be left fully compacted with sand filled joints at the completion of each day.
- X. Excess joint sand shall be swept off when the job is complete.

### 3.9 FIELD QUALITY CONTROL

- A. Final elevations shall be checked for conformance to the drawings after removal of excess joint sand.
- B. All surface and pavement structures shall be true to the lines and levels, grades, thickness and cross sections shown on the drawings. All pavements shall be finished to lines and levels to ensure positive drainage at all drainage outlets and channels. In no case shall the cross-fall of any portion of pavement be less than 2 percent. The final surface elevations shall not deviate more than 3/8 in. (10 mm) under a 10 ft. (3 m) long straight edge.
- C. The surface elevation of pavers shall be 1/8 to 1/4 in. (3 to 6 mm) above adjacent drainage inlets, concrete collars or channels.

END OF SECTION

SECTION 328400 – PLANTING IRRIGATION

PART 1 - GENERAL

1-01 SCOPE OF WORK:

- A. Furnish all labor, materials and equipment for the proper design and installation of an irrigation system to service the landscaped areas of the project. The system is to be designed by a Professional Irrigation Consultant, and installed by a qualified Irrigation Contractor. The design criteria of the system will be directed by the client and the Owner. The General Contractor shall submit to the Owners Representative a complete set of Construction Documents along with a Schedule of Values itemizing the major components of the system, along with the labor required to install said materials.

1-02 SUMMARY OF WORK:

- A. Extent of underground irrigation system is to be shown on the Drawings and in Schedules.
- B. Provide all documents, labor, materials and equipment required by or inferred from the Drawings and Specifications to complete the Work of this section.
- C. Provide additional work and materials required by local authorities at no extra cost to Owner.

1-03 QUALITY ASSURANCE:

- A. Industry Reference Standards: Refer to Division 1 Reference Standards Section.
  - 1. American Society for Testing and Materials (ASTM).  
D 3139-89 Specification for Joints for Plastic Pressure Piping Using Flexible Elastomeric Seals.
  - 2. National Electric Code (NEC), 1990 Edition.
- B. Qualifications:
  - 1. Installer Qualifications: Engage a company specializing in irrigation installation. Installer shall have successfully completed five projects similar in scope and size, as indicated in
    - a. Firm Experience Period: Five years of experience.
    - b. Field Foreman Experience: Five years of experience with installing firm.

3. Codes and Standards: Perform Irrigation Work in compliance with applicable requirements of governing authorities having jurisdiction. County regulations supersede these specifications. Notify Landscape Architect in writing of all discrepancies immediately.
4. Do not make substitutions: If the Contractor desires to make substitutions of materials, sufficient descriptive literature and material samples must be furnished to establish the material as an equal substitute. In addition, the Contractor must state his reasons for desiring substitute materials. Submit this request and information to Landscape Architect.
5. Approval and Selection of Materials and Work: The selection of all materials and the execution of all operations required under the Drawings and Specifications is subject to the approval of the Owner and Landscape Architect. They have the right to reject any and all materials and any and all Work which, in their opinion, does not meet the requirements of the Contract Documents at any stage of the operations. Remove rejected Work and or materials from Project Site and replace promptly.
6. Workmanship: Install materials and equipment in a neat and professional manner following manufacturer's recommendations.
7. Professional Irrigation Consultant shall be:
  - a. A professional firm whose primary source of income is derived from the professional irrigation design services they offer to the clients they represent.
  - b. A professional consulting firm without any affiliation to contractors, product suppliers, manufacturers or any interest that could be construed as a conflict of interest to the proposed project.
  - c. A professional firm that has experience in the design and administration of projects of similar scope and size as described in the Scope section.
  - d. Is a professional firm covered by all the necessary insurance's including general liability, and Error's & Omissions coverage. (provide proof of insurance documentation)

1-04 SUBMITTALS:

- A. **Approval: Obtain approval from Landscape Architect for all submittals prior to the beginning of Work, unless otherwise approved.**

- B. Design Drawings: Construction documents shall be prepared in a AutoCAD 2010 format.**
- C. Drawings shall be clearly and neatly plotted three (3) sets of blue lines for review and comment by representatives of the Owner. All automatic and manual valves, quick couplers, sprinklers and ancillary equipment shall be shown at scale to determine actual field dimensions.**
- D. Construction Documents submittals must be approved by an Owners representatives prior to an official notice to proceed
- E. As-Built Drawings: Any changes in the layout and/or arrangements of the proposed irrigation system, or any other differences between the proposed system and actual installed conditions are to be recorded by the Irrigation Contractor in the form of an "As-Built" Drawing. As-Built Drawing to be clearly and neatly drawn on a mylar sepia base of the original design provided by the Landscape Architect. Provide Owner and Landscape Architect with a reproducible mylar copy of the As-Built Drawings. Provide the Owner and the Landscape Architect with a copy of the As-Built Drawings before Work under this Contract will be considered for Acceptance. All automatic and manual valves, quick couplers, and wire splice locations shall be shown with actual dimensions to permanent bench mark points so they may be located easily in the field. Submittals of approved As-Built Drawings will precede any Application for Final Payment by the Contractor.
- F. Product Data: Submit, for information only, manufacturer's specifications, product data, installation instructions and general recommendations for **all components** of the irrigation system. Each submittal is to clearly identify the product, series/model number by use of a high lighter.
- G. Installer Certification: Submit written documentation certifying that Irrigation Contractor and Irrigation Consultant complies with requirements of "Installer Qualifications" above.

1-05 DELIVERY, STORAGE AND HANDLING:

- A. Deliver materials and equipment in such a manner as to not damage the parts or decrease the useful life of equipment.
- B. Store materials away from detrimental elements. Coordinate with General Contractor to secure a safe staging area.
- C. Handle, load, unload, stack and transport materials for irrigation system carefully to avoid damage. Handle pipe in accordance with manufacturer's recommendations.

1-06 PROJECT CONDITIONS:

- A. The site irrigation system is comprised of ***two major components***, an irrigation distribution and sprinkler system. The Contractor shall connect the distribution network to the ***irrigation***

**point of connection**. The Contractor will reimburse the Owner for all work deleted and not completed.

- B. Insurance on irrigation materials or equipment stored or installed is the responsibility of the Irrigation Contractor. Such insurance shall cover fire, theft and vandalism. Should the Contractor elect not to provide for such insurance, he will in no way hold the Owner responsible for any losses incurred by the aforementioned acts. The Irrigation Contractor is responsible for all costs incurred in replacing damaged or stolen materials or equipment prior to Substantial Completion of the Work.
- C. Obtain all required permits and pay all required fees, at no additional cost to the Owner. Any penalties imposed due to failure to obtain permits or pay fees are the responsibility of the Contractor.
- D. Provide and maintain all passageways, guard fences, warning lights and other protection devices required by the local authorities.
- E. Existing Grades: Existing grades will be within .2 feet of grades shown on the Civil Engineering Drawings at time of irrigation work. Determine condition of existing grades prior to beginning the Work. When irregular or incomplete grading conditions are encountered, notify the Owner in writing before beginning the Work. Perform Work in a manner which will avoid damage to finished grading and drainage resulting from the work covered in these Contract Documents shall be repaired at the Contractor's expense.
- F. Existing Site Improvements: Perform Work in a manner which will avoid possible damage. The Contractor is responsible for any damage of mechanical nature as well as damage resulting from leaks in the irrigation system whether due to negligence or otherwise.
- G. Test water conditions: The Contractor shall check the pressure at the **irrigation point of connection** and confirm minimum operating pressure noted in this Specification. If minimum operating pressure cannot be obtained, notify Landscape Architect.
  - 1. In the event the water pressure does not meet minimum operating pressure at the irrigation point of connections noted in this Specification, notify Landscape Architect.  
The Irrigation Consultant will make recommendations concerning the development of a booster pump station capable of providing the flow and pressure required as indicated in the Specifications Section 1-06, Paragraph B.
  - 2. In the event the water pressure significantly exceeds the operating pressure noted in this Specification, provide a pressure regulator down stream of the backflow preventer.

- I. Sleeves, if required, are to be installed by the General Contractor. Irrigation sleeves shall be installed as per details. If sleeving horizontal depth exceeds the detailed requirement by 6 inches (6”), it will be the responsibility of the General Contractor to expose the horizontal ends below finish grade. The General Contractor is to expose irrigation sleeves for Irrigation Contractor prior to start of Irrigation Work in all areas where sleeving is not installed as per details. Coordination and scheduling for excavation of sleeve ends is the responsibility of the Irrigation Contractor.
- J. Coordinate and schedule all Work with General Contractor.
- K. Damages resulting from irrigation installation to work of other trades must be repaired at the expense of the Irrigation Contractor in a timely fashion.
- L. Make minor adjustments to system layout as may be required and requested at no additional cost to the Owner.
- M. Keep Project Site clean and orderly at all times during construction

1-07 WARRANTY:

- A. Warranty all Work for a period of one year, starting on the Date of Substantial Completion, against defects in materials, equipment, workmanship and any repairs required resulting from leaks or other defects of workmanship, material or equipment.
- B. Repair unsatisfactory conditions promptly at no cost to the Owner.
- C. Emergency repairs may be made by the Owner without relieving the Irrigation Contractor of his warranty obligations.
- D. Repair settling of backfilled trenches occurring during the warranty period, including restoration of damaged plantings, paving or improvements resulting from settling of trenches or repair operations.
- E. Respond to Owner's request for repair work within ten (10) days. If not, Owner may proceed with such necessary repairs at the Contractor's expense.
- F. Provide written warranty executed by pump station manufacturer that all system equipment and components will be free from all defects in material and workmanship for a period of one year after the date of Substantial Completion.**

PART 2 - PRODUCTS

2-01 PIPE AND FITTINGS

- A. All Plastic Pipe from sizes 3" and above shall be Class 200, SDR 21, unplasticized rigid PVC pipe with integral bell and rubber ring gasket unless otherwise specified. Pipe from sizes 2 1/2 to 1 1/4 shall be Class 200, solvent weld P.V.C. pipe. Pipe from sizes 1" and 3/4" shall be Class 200, solvent weld P.V.C. pipe. 1/2" pipe shall be Class 315 solvent weld P.V.C. Pipe. All pipe shall be supplied in 20' standard lengths. All pipe that is exposed or not below grade shall be Schedule 80 PVC.
- B. Fittings for integral bell rubber ring gasketed pipe (3" & larger), shall have the gasket type fittings.
- C. All pipe fittings size 3" and greater shall be ductile iron in construction. All fittings 2 1/2" and under shall be Schedule 40 solvent weld fittings rated for 200 psi (ASTM D-3139).
- D. Solvent weld PVC pipe, shall be rigid PVC pipe and shall be assembled using appropriate PVC pipe cleaner/primer and solvent cement in accordance with the manufacturer's recommendations. Solvent cement shall be # 715 Gray NSF approved.
- E. All solvent weld fittings shall conform to Schedule 40 or Schedule 80 PVC dimensions and specifications for solvent weld fittings.
- F. Expansion Joints: Shall consist of integral bell and rubber gasket coupling, install every 300 feet of solvent weld piping.
- G. Runs of pipe over 20' length must be installed with standard 20' length sections..
- H. PVC Pipe Couplings Located Within Sleeves: 4" and smaller to be solvent weld. 6" and larger to be mechanical joints. Upon exiting sleeves, pipe solvent weld or integral bell and rubber gasket, as specified.

2-02 RISERS

- A. Provide Threaded Schedule 80 PVC Risers. All risers above grade to be either dark gray or black PVC pipe.

2-03 ELECTRIC WIRING

- A. 120 Volt AC Wiring: 120 volt service to controller shall consist of three wires: one black, one white, and one ground. Electrical service to be provided by Contractor.

- B. Splices in controller wiring shall be waterproof.
  - 1. Acceptable Manufacturers and Products:
    - a. Manufacturer: 3M
      - (1) Product: DBY
    - b. Manufacturer: 3M
      - (1) Product: 3577
    - c. Manufacturer: Paige
      - (1) Product: DBY
- C. Control Wiring shall be 600 volt solid wire U.L. approved for direct burial in ground. Minimum wire size: 14 gauge. Control wiring and wiring connections from the controller to the valves is included in this Contract.
  - 1. Acceptable Manufacturers and Products:
    - a. Manufacturer: Paige Electric Co.
    - b. Manufacturer: King Wire and Cable
    - c. Manufacturer: Spectrum Wire Corporation

2-04 SPRINKLER HEADS

- A. Spray and rotary sprinklers: Provide where indicated on the drawings. All spray heads (6" & 12" pop up) shall be provided with an internal pressure regulating device. All sprinkler heads (sprays and rotary) shall have an internal check valve to minimize low head drainage and be installed on (4) four elbow swing joints. Heads shall perform to Manufacturer's Specifications concerning diameter of throw and gallonage at provided pressure.
  - 1. Acceptable Manufacturers and Products:
    - a. Manufacturer: Rainbird
      - (1) Product: Sprays # 1806 and # 1812 PRS-SAM
      - (2) Product: Rotor # 5000



- b. Manufacturer: Toro
    - (1) Product: Sprays # 570PRX-6p and 570PRX-12p
    - (2) Product: Rotor # S800
  - c. Manufacturer: Hunter
    - (1) Product: Sprays # PS-06 and # PS-12
    - (2) Product: Rotor I-20 ADS
- B. Drip Irrigation Emitters shall be of the in-line self cleaning, pressure compensating or insertable variety where indicated on drawings.
- 1. Acceptable Manufacturers :
    - a. Manufacturer: Netafim Irrigation Inc.
    - b. Manufacturer: Irridelco International Corp.
    - c. Manufacturer: Geoflow Subsurface Irrigation

2-05 AUTOMATIC CONTROLLER

- A. Each controller location must be easily accessible for maintenance. Provide for the possibility of making minor timing adjustments to the controller in the field.
- B. Provide controllers capable of fully automatic, as well as manual operation of the system. Controller housing is to be a wall or pedestal mounted, where noted on the drawings, in weatherproof, lockable cabinet.
- C. Provide controller which operates on a minimum of 110 volts AC power input and is capable of operating 24 vole AC electric remote control valves, with a reset circuit breaker to protect from overload. Contractor is responsible for connection to 120 VAC power to controller.
- D. Each station shall have a time setting which can be set for variable timing in increments from 0 to 60 minutes, or set to omit the station from the irrigation cycle.

- E. The controller shall have a master "on-off" switch shall allow the valve power output to be interrupted without affecting the controller.
- F. The controller shall be constructed so that all internal parts are accessible through the controller door without disturbing the cabinet installation.
- G. Acceptable Manufacturers and Products:
  - 1. Manufacturer: Rainbird
    - a. Product: ESP-MC Series
  - 3. Manufacturer: Hunter
    - a. Product: ICC Series

2-06 METER

- A Existing domestic irrigation water meter is located on site and to be utilized

2-07 BACKFLOW PREVENTER:

- A. Existing backflow preventer is located on site and to be utilized

2-08 VALVE BOXES

- A. Control Valves: Shall be in a 12" x 18" standard Valve Box with non-hinged cover.
- B. Backflow Preventer: Shall be in a 20" x 34" Valve Box with non hinged cover.
- C. Isolation Valves and Wire Splices and Quick Coupling Valves: Shall be in a 10" round valve box with cover.
- D. All Valve Boxes are to be black in color with black colored covers.
- E. Acceptable Manufacturers:
  - 1. Manufacturer: Rainbird
  - 2. Manufacturer: Ametek
  - 3. Manufacturer: DFW / HPI

2-09 SLEEVES

- A. Class 200 PVC Pipe Type SDR 21:

2-10 QUICK COUPLING VALVES AND KEYS

- A. Quick coupling valves shall be used as a source to the pressurized main line so that a hose can be attached for manual hand watering. The quick coupling valve will be constructed of brass with a spring loaded seal that will keep the valve in a closed position until the key is inserted into the valve. The valve will also have a hinged locking purple rubber cover to prevent any debris getting into the internal mechanism of the valve. The cover shall be marked with "Do Not Drink" in English and Spanish. All quick coupling valves will be installed on a triple elbow swing joint. Provide size as indicated on drawings.
- B. Quick coupling keys shall be of the single lug variety. Attached to the key will be a hose swivel adapter sized to the commonly used hose on the project. The key and swivel will both be constructed of brass.
- C. Acceptable Manufacturers:
1. Manufacturer: Rainbird
  2. Manufacturer: Toro
  3. Manufacturer: Hunter

2-11 HOSE BIBS:

- A. Provide all cast brass or bronze body hose bibb installed below grade in a 12" x 18" valve box.
- B. Acceptable Manufacturers:
1. Manufacturer: Rainbird
  2. Manufacturer: Nibco
  3. Manufacturer: Woodford

2-12 CONTROL VALVES:

A. **(Plastic Body)**

Provide electric remote control valves (size as indicated on drawings). Valves are to be constructed of a glass-filled nylon material with a self cleaning stainless steel screen. Low flow/low pressure operating capabilities. Flow: .25 to 200 GPM; Pressure: 20 to 200 PSI. Valves to conform to Manufacturer's Specifications concerning performance and at pressures provided.

**(Brass Body)**

Provide electric remote control valves (size as indicated on drawings). Valves are to be constructed with a brass body and bonnet assembly having a self cleaning screen. Flow and pressure operating capabilities. Flow: 5 to 200 GPM; Pressure: 20 to 200 PSI. Valves to conform to Manufacturer's Specifications concerning performance and at pressures provided.

B. Acceptable Manufacturers:

1. Manufacturer: Rainbird
2. Manufacturer: Toro
3. Manufacturer: Hunter

2-13 **SURGE PROTECTION EQUIPMENT**

A. Provide lightning arrestor for controllers not equipped with primary surge protection.

2-14 **ISOLATION VALVES**

A. Provide all gate valves for isolation purposes, allowing full diameter opening when in full open position.

B. Manually operated valves: same size as line.

C. Valves 3" or smaller: brass construction, threaded, and rated for 200 psi WOG.

1. Acceptable Manufacturers:

- a. Manufacturer: Rainbird
- b. Manufacturer: Nibco
- c. Manufacturer: Hammond

- D. Valves 4" or larger: cast iron fitted with rubber ring, slab-type gasket.
  - 1. Acceptable Manufacturers:
    - a. Manufacturer: Rainbird
    - b. Manufacturer: Mueller
    - c. Manufacturer: Clow

2-15 MISCELLANEOUS SYSTEM COMPONENTS

- A. Provide risers, reducers, couplings, adapters, fittings as necessary to complete the irrigation system.
- B. Provide rain sensor with adjustable shut-off point from 1/8" to 1" of accumulated rainfall. Switch will interrupt common wire. Unit shall be UL approved.
  - 1. Acceptable Manufacturers and Products:
    - a. Manufacturer: Rainbird
      - (1) Product: Raincheck
    - b. Manufacturer: Toro
      - (1) Product: Rainswitch # 850-74
    - c. Manufacturer: Weathermatic
      - (1) Product: Rain - Stat # 950

PART 3- EXECUTION

3-01 GENERAL

- A. Inspection of Work in progress: During the installation, the Landscape Architect will make regular inspections and reject any work and materials which do not meet the requirements called for in the Contract Documents.
- B. Inspect project site prior to start of Work to determine that all site conditions are acceptable for Irrigation Work to begin. Inform Landscape Architect of unsuitable conditions. Do not proceed with installation of irrigation system until unsatisfactory conditions have been corrected in a manner acceptable to installer.

- C. Locate all existing underground utilities prior to trenching and/or boring operations. Obtain utility locations from Owner and/or General Contractor and utilize utility locating services when necessary.

3-02 EXCAVATION:

- A. All excavation is unclassified and includes all materials encountered that are not classified as rock excavation.
- B. Report exceptions to the Landscape Architect before excavation. An adjustment in price will be established which includes removal and disposal of the unsuitable material, and the acquiring of additional backfill material.
- C. Excavation in newly sodded areas: Prior to excavation, remove sod, preserve and replace after backfilling is completed.
- D. Excavation in established grass or newly seeded areas: After excavation and backfilling is completed, re-grade trenched area consistent with surrounding area and re-seed with 100% pure seed of type grass existing. Mulch with straw and water.
- E. Excavation through existing asphalt, cutting, removal and replacement of asphalt, as noted on the drawing, is the responsibility of the Irrigation Contractor.

3-03 LEAKAGE TEST:

- A. The system shall be subjected to a leakage test. Leakage shall be defined as the quantity of water that must be supplied into the pipe to maintain the design working pressure after all air in the pipeline has been expelled and the pipe has been filled with water. Leakage shall not exceed the quantity determined by the formula given below:

$$L = \frac{ND(\text{Square root of } P)}{3700}$$

Where **L** = allowable leakage in gallons per hour  
**N** = number of joints in pipeline  
**D** = nominal diameter of the pipe in inches  
**P** = average test pressure during the leakage test in psig

If leakage exceed the allowable rate, leaks shall be found and repaired and the test repeated until successful.

3-04 BACKFILL:

- A. Backfill material shall be free from rocks, large stones, and other unsuitable substance which could damage the pipe or create unusual settling problems. Backfill in 6" layers and tamp after each layer to prevent excessive settling.
- B. Backfill trenches containing plastic pipe when pipe is cool to avoid excessive contraction in cold water. Such backfilling can be done in early morning hours or the pipe may be water cooled prior to backfilling procedures.
- C. Minimum depth of cover of all pipe is as follows:
  - 1. 1/2" - 1" pipe - minimum depth cover is 12".
  - 2. 1 1/4" - 2" pipe - minimum depth cover is 18".
  - 3. 2 1/2" - 4" pipe - minimum depth cover is 24".
  - 4. 6" - 8" pipe - minimum depth cover is 36"
  - 5. 10" - 12" pipe minimum depth cover is 42"

3-05 SLEEVING:

- A. Location of sleeving shown on the drawings is schematic. General Contractor to make adjustments necessary to accommodate existing vegetation, utilities and other existing conditions.
- B. Repair of damage to existing utilities, structures or other construction resulting from installation of sleeves is the responsibility of the General Contractor.
- C. Irrigation sleeves shall be installed as per details. If sleeving horizontal depth exceeds the detailed requirement by (6") 6 inches, it will be the responsibility of the General Contractor to expose the horizontal ends below finish grade. In all areas where sleeving is not installed as per details the General Contractor is to expose irrigation sleeves for Irrigation Contractor prior to start of the Irrigation Work

3-06 PIPE:

- A. Pipe Joints:
  - 1. Solvent Weld PVC Pipe: Assemble according to Manufacturer's Recommendations, using appropriate PVC pipe cleaner/primer and solvent cement.

- B. Main Line: Install according to Manufacturer's Recommendations. Provide concrete thrust blocks at all directional changes on all pipe 3" and larger that is of the gasketed variety, as per drawings.
- C. Pipes and Fittings:
  - 1. Install according to manufacturer's Recommendations including snaking-in of PVC pipe to prevent excessive strain when contracting in cold weather.
- D. Lateral Lines and Risers:
  - 1. Install according to Manufacturer's Recommendations using standard techniques.
  - 2. Combine lateral lines and main supply lines in common trenches wherever possible.
  - 3. Install risers such that no excessive movement occurs while sprinkler head is in operation. Height of risers to be in accordance with planned and existing plant material. Height of all risers is subject approval of Landscape Architect.
  - 4. Plug lines immediately upon installation to minimize infiltration of foreign matter.
  - 5. Flush lateral lines and risers prior to installation of sprinkler heads.
  - 6. Above ground risers must be dark gray or black in color.

### 3-07 SPRINKLER HEADS

- A. Low Pop-up Sprinkler Heads: Install in such manner that top is 1" above finish grade. Where finish grade has not been established extend a riser minimum of 12" above existing grade to mark location of head. After finish grade is established install heads as shown on the drawings.
- B. High Pop-Up Shrub Heads: Finish height to be determined by Landscape Architect.
- C. Backfill around sprinkler head assembly in such manner as to stabilize the sprinkler head so that no lateral motion is exhibited during operation.
- D. Sprinkler heads on risers: Install as shown on the drawings. High-pop sprinkler heads shall be installed in landscape areas to retract out of sight when non-operational. Height of all heads in bed areas to be determined in the field by the Landscape Architect.



- E. Drip irrigation emitters are to be located in a manner that will provide optimum concentration of water to the plant material. Drip irrigation shall be installed in a grid pattern with manifolds to insure hydraulic balance.
  - 1. For trees and shrubs, individual emitters to be used. For groundcover, inline emitters with 18" spacing to be used

3-08 ELECTRIC CONTROL WIRES

- A. Install control wires in orderly fashion, locate in main line trench. Bundle wires together and tape at 10' intervals. Position wires to the right of the water supply line in the direction of the water flow.
- B. Provide looped slack at directional changes in supply line to allow for contraction of wires.
- C. Keep wire splices to a minimum and provide 10" round valve box at each splice location.
- D. Pass wires under existing or future paving, construction, etc., through PVC sleeves.
- E. For each open station on any given controller, there shall be spare wires to the furthest (2) two control valves located in diametrically opposed directions from the controller, plus one additional spare wire.

3-09 CONTROL EQUIPMENT:

- A. Install automatic valves and controllers according to Manufacturer's Recommendations and as shown on the Drawings.

3-10 VALVE BOXES:

- A. All valves are to be housed in valve boxes. Install according to Manufacturer's Recommendations, and as shown on the drawings. Position boxes at a height that will not cause them to interfere with maintenance machinery (e.g., movers) and such that soil and mulch do not wash into the box. Locate valve box in mulched or natural areas one foot inside the bed line. Where no mulched areas or natural areas exist within forty feet of valve box locations install valve box in turf area. Install no more than two valve boxes together when installed in turf areas.

3-11 SURGE PROTECTION EQUIPMENT:

- A. Install surge protection equipment on primary (110 VAC) power lines in accordance with the electrical grounding instructions included with each controller. Connect each surge protection unit to at least one 5/8" diameter by 9' long copper clad grounding electrode

driven into the soil to its full depth. Place electrodes no closer than two (2) feet from the controller cabinet or any control or power wire. Be consistent in locating ground rods throughout the installation with respect to controller positions.

- B. Ground wire between surge protection device and grounding electrode to be single strand bare copper wire at least one size greater than the wire supplying power to the control unit. Route ground wire away from power and control wires where possible. When it is necessary to pass through the controller cabinet wall use two (2) #L-70 copper grounding lugs and a brass bolt as noted on the drawings. Use a #WE 5/8 ground rod clamp (single piece and bolt) to make connection between ground rod and ground wire. Bury ground wire passing between controller and ground rod a minimum of ten inches. Cover the top of the rod and the clamp itself with a 4" round cover with lid at grade level.

3-12 BALANCING AND ADJUSTMENT:

- A. Balance and adjust the various components of the sprinkler system so that the overall operation of the system is most efficient. This includes synchronization of the controllers, adjustments to pressure regulators, part circle sprinkler heads, and individual station adjustments on the controllers.
- B. Upon completion of the irrigation system, perform a coverage test with the Owner's representative to determine if the irrigation coverage is adequate. Correct any inadequacies.

3-13 IRRIGATION DISTRIBUTION AND SPRINKLER OPERATION TESTING:

- A. Upon completion of the irrigation system, and after head installation, test the entire system for proper operation. Flush all air from the system and check components for proper operation.

3-14 OWNER ORIENTATION:

- A. Upon completion of the Work and at a time and place acceptable to the Landscape Architect and Owner, the Irrigation Contractor is responsible for the orientation of the Owner's maintenance personnel in the operation, maintenance, and repair of the system. Furnish copies of all available parts lists, trouble shooting lists and specification sheets, to the Landscape Architect.
  - 1. Operating and Maintenance Manuals shall constitute the basis of orientation.
- B. Set the initial watering schedules and programming of the automatic controllers at direction of Landscape Contractor.

3-15 WINTERIZING THE SYSTEM:

- A. The irrigation system shall be winterized the first winter season following Substantial Completion of the Project in total. The irrigation piping shall be winterized by first blowing the system clear of water using compressed air (80 psi maximum) admitted into the piping at a quick coupling valve or hose bib located at a higher elevation on the system piping. Activate individual zones, higher zones first, then proceed successively through the system towards lower elevations. Proceed through all zones twice. The air compressor must be sized to provide the volume requirements necessary to completely evacuate the irrigation piping system. The air compressor used to winterize the system must have an engine separate from the compressor tanks to prevent high temperature air from being injected directly into the PVC piping.

3-16 CLEAN UP AND PROTECTION:

- A. During irrigation Work, keep Project Site clean and orderly.
- B. Upon completion of Work, clear grounds of debris, superfluous materials and all equipment. Remove from site to the satisfaction of the Landscape Architect.
- C. Protect Irrigation Work and materials from damage due to irrigation operations, operations by other contractor and trades and trespassers. Maintain protection until Date of Substantial Completion.
- D. Cover all openings in to the system as it is being installed to prevent obstructions in the pipe and the breakage, misuse or disfigurement of the equipment.
- E. Theft: Irrigation Contractor is responsible for theft of equipment and material at the job site before, during and after installation, until Date of Substantial Completion of the Work in total.

3-17 INSPECTION AND ACCEPTANCE:

- A. Periodic Inspections will be made by the Landscape Architect to review the quality and progress of the work. Work found to be unacceptable must be corrected within five calendar days. Remove rejected materials promptly from the project.
- B. Upon completion of Work, the Contractor shall notify the Landscape Architect and Owner at least ten (10) days prior to requested date of inspection for Substantial Completion of all portions of the Work. Landscape Architect will issue a punch list for work to be corrected. All work on the punch list must be completed within five (5) working days form the date of inspection. Where inspected Irrigation Work does not comply with requirements, replace rejected Work. If such replacements are not completed within the time specified, the Irrigation Contractor may be considered to be in default of the Contract, and the Owner may use the Contract Retainage to hire other Contractors to finish the Work.

- C. It will be the responsibility of the Irrigation Contractor to provide a reliable communication system (i.e.: Two way radios or remote radio control activation system) for Substantial Completion and all periodic inspections.
- D. If an inspection to verify Substantial Completion has been scheduled and the Landscape Architect arrives at the site and determines that the Irrigation System is not substantially complete (all system components in place, operational and checked) the Contractor shall be responsible for all costs incurred by the Landscape Architect to inspect the site. Reimbursable expenses include but are not limited to the following: Mileage, airfare, consultants time, parking fee, meals, rental car, etc. All incurred expenses will be deducted from the final contract amount.
- E. Certificate of Substantial Completion will be issued for acceptable work and completion of "As-Built" Drawings, the Landscape Architect will verify the system for Substantial Completion. If punch list items are issued with the Certificate, they must be corrected within five (5) working days.

END OF SECTION 328400

## SECTION 32 91 00 - FINISH GRADING

### PART 1 – GENERAL

#### 1.1 DESCRIPTION

This section covers furnishing all labor, materials, equipment, tools, and incidentals necessary to finish grade the landscaped areas shown on the drawings. This section includes work along roadways, in parking islands and planters adjacent to buildings.

### PART 2 – EXECUTION

#### 2.1 BACKFILLING

- A. The general contractor shall be responsible for rough grading all site areas to within  $\pm 0.20$  of a foot of final proposed grades. The landscape contractor will be responsible for fine grading of parking islands as well as backfilling of low spots or inequities in parking islands, medians, behind curbs, and all other landscaped areas on site. Any additional soil needed to correct the grade inequities left by the general contractor may be available on site.
- B. The general contractor is responsible for backfilling all planters up to the bottom of the sidewalk slab. The landscape subcontractor shall be responsible for backfilling the planters as required to provide for positive drainage away from the buildings and out of planters.

#### 2.2 LANDSCAPE BERM SHAPING

- A. The landscape contractor shall be responsible for final shaping of all landscape berms in parking islands, landscape areas and road frontages at the direction of the Landscape Architect. Landscape contractor shall be responsible for the removal and off-site disposal of all debris collected during the berm grading operations.

#### 2.3 PREPARATION FOR LAWNS

- A. The landscape contractor shall be responsible for fine grading with a small rubber tired tractor all the areas on site to receive lawn type grassing and sodding. The landscape architect will inspect all fine graded areas for approval prior to grassing operations.

### PART 3 - OWNER'S ACCEPTANCE

- A. The landscape contractor is responsible for maintaining the finish grades until final acceptance by the Owner or Owner's representative. Repairs required resulting from negligence are at the contractor's expense.

END OF SECTION 32-91-00

Innovation Center Park  
Columbia, South Carolina  
University of South Carolina

32 91 00 -2  
Finish Grading

## SECTION 32 92 00 – LANDSCAPING

### PART 1 - GENERAL

#### 1.1 DESCRIPTION

- A. This section includes furnishing labor, materials, equipment and services for all trees, shrubs, ground covers, bedding, installation, and related work required by the Drawings and Specifications.
- B. The Contractor's attention is directed to the fact that there are active utilities located within the limits of work. Before commencing any work required under the Contract, he shall find the location of all utilities, subsurface drainage, and underground construction and take proper precautions not to disturb or damage any subsurface improvements. The Contractor is responsible for all repairs to damaged utilities resulting from the work covered by this Contract without claims against the Owner for additional cost.
- C. The Contractor shall make a field examination of the project site for the purpose of verifying the following:
  - 1. Accuracy of all finish grades within the work area
  - 2. That drawing dimensions relate with actual field conditions.
- D. The Contractor shall notify the Landscape Architect of any conditions that will prevent proper execution of the work.

#### 1.2 QUALITY ASSURANCE

- A. Reference Standards: Conform to recommendations, specifications and standards of the following:
  - 1. *Standardized Plant Names*, 1942 Edition, American Joint Committee on Horticultural Nomenclature.
  - 2. *American Standard for Nursery Stock*, 1980 Edition, American Association of Nurserymen.
- B. The selection of all materials and the execution of all operations required under the Specifications and Drawings shall be subject to the approval of the Landscape Architect. The Landscape Architect shall have the right to reject any or all materials and any or all work, which, in his opinion, does not meet the requirements of the Contract Documents at any stage of the operations. The Contractor shall move all rejected materials promptly from the site.
- C. The Landscape Contractor is hereby made aware that both the Owner and the Landscape Architect anticipate that the landscape installation of this facility shall be of the highest quality possible. To this end, the landscape contractor shall insure the following:

1. All plant material shall be selected from the highest quality stock, and be specimen quality.
2. All work to be performed, such as preparing plant pits, installing plant mix, planting procedures, staking, guying, and pruning shall be strictly managed and executed and performed by experienced personnel.
3. A competent superintendent with on site decision making capacity will be present at all times.

### 1.3 SUBMITTALS

- A. The Contractor shall collect one soil sample, from three different locations slated to receive landscaping, for the purposes of testing. Each sample (three total samples) shall be approximately 1 KG in volume (approximately 1 gal. Ziploc bag) and shall receive the following test performed by A&L Agricultural Labs:

1. S-1A
2. S-3
3. Texture Analysis

- B. Send soil samples to:

Mr. Lynn Griffith  
A&L Southern Agricultural Laboratories  
1199 West Newport Center Drive  
Deerfield Beach, Florida 33442

Phone: (954) 571-2103

- B. Test results shall be submitted to the landscape architect by successful bidder within 14 days following bid award date.
- C. Contractor shall provide 5"x7" color photographs of all selected plant material at nursery. Show a 10' minimum measuring rod next to all trees. Label each picture with name and size of submittal. Submitted photograph are to be used for landscape architect's review for preliminary approval.
- D. List of Plant Material, Size, Remarks, Nursery Location.
- E. Date for trip to nursery to select and tag all trees.
- F. The landscape contractor shall submit bills of lading for all fertilizer tablets, soil amendments and Mycorrhizal tree inoculants to the Landscape Architect for review and verification of delivery to site.

### 1.4 GUARANTEE

- A. The guarantee period for all trees, plants, shrubs or ground covers shall begin at the date of final acceptance by the Landscape Architect's construction representative.
- B. The Contractor shall guarantee all plant materials for a period of one (1) year beginning at date of final acceptance of the Work in total. The Owner may either contract with the installation Contractor for maintenance or the Owner may follow the prescribed



maintenance procedures. No replacements are necessitated by neglect or abuse by the Owner.

## 1.5 PLANT MATERIAL SELECTION & TAGGING

- A. Landscape Contractor to arrange a selection and tagging trip to nursery for the purpose of securing project plant material. All trips are to be made within ten hours. Landscape Architect has allocated three (3) trips for the above. Landscape Contractor to pay for all expenses including a fee of \$850.00 per day for all trips over the allotted three trips. Landscape Contractor to participate in trip.
- B. Landscape Contractor to provide locking straps for all selected plant material.

## PART 2 - PRODUCTS

### 2.1 PLANTS

- A. Specific requirements concerning the various species and the manner in which they are to be furnished are shown in the drawings and plant list:
  - 1. Quantity and Size: Plants shall be nursery grown except where noted, freshly dug, normally shaped and well branched, full foliated when in leaf and shall have healthy, well-developed root systems. Trees must be self-supporting, with straight trunks and with leaders intact. All plants furnished shall be free of insect infestations and eggs and shall have been grown under climatic conditions with temperature extremes similar to those of the locality of the project for a minimum of two (2) years prior to use on this project. All plants shall be true to species and variety. Plants used where symmetry is required shall match. Varieties common to an area (i.e. parking lot) shall match in height and form. The Landscape Architect will permit no substitutions without written permission.
  - 2. Material furnished in a size range specified shall be interpreted to mean that not less than 50% shall be of the maximum size specified within each range.
  - 3. The determining measurements for trees shall be caliper, height, and spread. Caliper shall be taken 6" above the ground for the trees up to and including 6" in caliper. Trees over 6" in caliper shall be measured at 12" above the ground line.
  - 4. Foliage Width and Origin: Must be measured across the mean foliage width dimension, not including random outstanding branches. Foliage height shall be measured from the top of the growing container or root ball to the top of plant not including random outstanding branches.
  - 5. Plants larger in size than those specified may be used with approval of the Landscape Architect at no additional cost to the Owner. If the use of larger plants is approved, the ball of earth or spread of roots shall be increased proportionately.
  - 6. Container-grown plants in containers or wooden boxes of equal quality as balled and burlapped plants may be substituted in lieu thereof. Plants grown in containers shall be delivered and remain in containers in a shady location until planted. Plants in containers shall be watered prior to transportation and shall be kept moist until planted. The container must be removed prior to planting, with care being exercised not to injure the plant.

## 2.2 AVAILABILITY

- A. If proof is submitted in writing that any plant specified is not obtainable in the eastern United States by a minimum of five (5) reliable nursery sources which are members of The American Nurserymen's Association, then a proposal will be considered for use by the Landscape Architect of the nearest equivalent size or variety with no increase of contract price.

## 2.3 BURLAP

- A. Burlap for wrapping earth ball shall be made of jute and weigh not less than 7.02 oz. per square yard.

## 2.4 FOREST HUMUS OR PREPARED SOIL ADDITIVES

- A. Forest humus or prepared soil additives shall be air-dried, finely shredded, and suitable for horticultural purposes. Its pH value shall be between 5.5 and 6.5, and it shall contain no more than 35% moisture by weight.
- B. Prepared soil additives for use in the preparation of backfill soil mixes shall be fully composted, non-odorous, pasteurized, air-dried, finely shredded, and suitable for horticultural purposes. Its pH value shall be between 5.5 and 7.0, and it shall contain no more than 35% moisture by weight. If the pH of the existing, on-site soil is less than 5.0 use a soil amendment that has a pH of 7.0 (neutral). If the existing soil has a pH greater than 5.0 use a 1:1 mix of peat moss and pine fines as the amending material. Any soil additive or soil mix determined to have an offensive odor by the landscape architect shall be immediately removed from site and replaced with fully composted non-odorous product, at the expense of the contractor.
  - 1. Basis of Design Product: Mr. Natural CLM Mix
  - 2. Alternate: Erth Food Products TLM Mix
  - 3. Alternate: Cowart: Blackened Topsoil
  - 4. Alternate: Cowart Organic Compost

## 2.5 PREPARED SOIL MIXES

- A. Prepared Soil Mixes for annuals, perennials and vegetable beds planting areas shall be one of the following products:
  - 1. Mr. Natural CLM Mix
  - 2. Erth Food Products TLM Mix
  - 3. Cowart Blackened Topsoil

## 2.6 MULCH

- A. Common landscape beds to receive double hammered, double shredded hardwood mulch unless otherwise noted. Mulch shall be two inches deep, clean, fresh, and free of branches, cones and foreign matter for all landscape areas unless otherwise noted.
- B. Flowerbeds to receive pine bark mini-nuggets, two inches deep.

- C. Sedum, sempervivum and thyme beds shall be mulched with expanded slate/ Permatill or Mexican beach pebbles ¼ to ½ “size or other miniature rock specified by landscape architect to a depth of 1”.

## 2.7 PH FACTOR READINGS

- A. The Contractor shall be responsible for neutralizing the soil to a pH reading of not less than 6 and not more than 7.5 by means described on the soils test performed by the specified agricultural soil testing laboratory.

## 2.8 COMMERCIAL FERTILIZER

- A. Commercial fertilizer shall be a complete fertilizer, 60% of the nitrogen of which is derived from natural organic sources or urea form. The following nitrogen-phosphorous-potash ratio types shall be applicable 16-4-8. It shall be delivered to the site in standard size unopened containers, showing weight, analysis, and name of manufacturer. It shall be stored in a weatherproof storage place in such a manner that it will be kept dry. Refer to soil test data prepared by specified testing facility for fertilizer analysis.

- B. Agriform 21 gram slow release fertilizer tablets shall be used for all tree and shrubs at the following rates:

1. Fertilizer Tablet Application Rates:	
2. Container/Tree Size:	No. of Tablets
3. 4” Pots	1 tablet
4. 1 gal.	1 tablet
5. 3 gal.	3 tablets
6. 7 gal.	5 tablets
7. 15 gal.	10 tablets
8. 1.5-3” cal. tree	20 tablets
9. 3.5-5+” cal. tree	30 tablets

- C. MycorTree Tree Saver Transplant (Mycorrhizal Transplant Inoculant) shall be incorporated into the backfill mix for all trees and shrubs per manufacturer’s recommended rate of application.

## 2.9 GUYING AND STAKING

- A. See detail.

## 2.10 TREE GUYING SYSTEM

- A. See detail.

## 2.11 PLANTING SOIL MIX

- A. Planting soil mix backfill for all trees and shrubs shall consist of the following: 1 part prepared soil additive (refer to Section 2.4) to 2 parts native or existing soil provided the soil meets the results of the specified test (Section 1.03-A). The planting soil mix may be prepared by the following methods:

1. For all trees and shrubs planted in individual planting pits: mix 1 part prepared soil additive to 2 parts native or existing soil from on site topsoil stockpile.
  2. For all shrubs and ground covers mass planted in beds with a spacing less than 24" on center: spread prepared soil additive to a depth of 4 inches over entire bed area and incorporate into the existing soil using roto-tiller. Excavate plant pits and back fill using the cultivated soil mix.
- B. Rose Bed Preparation: The contractor shall prepare all rose beds as follows: Remove all weeds, rocks and debris from area. Place 6" depth of specified prepared soil additive over entire rose bed and incorporate into the existing soil using roto-tiller. Crown soil in bed to height of 6" above grade. Seasonal Color and Perennial Bed Preparation: The contractor shall prepare all Seasonal Color beds; and beds containing all Perennials (except Daylilies) as follows: Remove all weeds, rocks and debris from area to receive annuals. Remove 6" depth of existing soil from entire annual bed and replace with 12" depth (crown of bed will be 6" above grade) of 100% "Mr. Natural" CLM plant mix or approved alternate.
- C. Seasonal Color, Perennial, and Vegetable Bed Preparation: The contractor shall prepare all Seasonal Color beds, Perennial, and Vegetable beds when indicated on the plant list as follows: Remove all weeds, rocks and debris from area to receive annuals. Remove 6" depth of existing soil from entire annual bed and replace with 12" depth (crown of bed will be 6" above grade) of "Mr. Natural" CLM plant mix.
- D. Sedum Bed Preparation: The contractor shall prepare all sedum beds as follows: Remove 6" depth of existing soil. Place 6" depth of 'Mr. Natural CLM plant mix and 4" depth of '89 Stone over the entire surface of the planting bed. Mix in CLM and '89 Stone to a depth of 12 ". Crown the bed to ensure positive drainage.
- E. Rhododendron, Azalea, Pieris, & all other Ericaceous Plants Bed Preparation: Remove weeds and debris from bed area. Place shrubs on top of ground at specified spacing and back fill around each plant with 100% specified soil additive. Do not included any native or on site soil into the backfill.
- F. Pots and Hanging baskets will be filled with Fafard Mix #3 professional Potting Mix. In pots, the finished grade of the soil should be just above the rim of the pot and sloping down to 2" below the rim of the pot.
- G. Apply pre-emergent herbicide to landscape beds excluding annual, rose, seeded areas, pots, baskets and perennial areas.

## 2.12 SOIL TO ACHIEVE A FINISHED GRADE

- A. The general contractor will be responsible for providing and placing soil to achieve a finished grade in all islands and planting areas; however, the landscape contractor shall be responsible for finish grading of all areas to receive landscape improvements including filling any voids or inequities in the areas backfilled by the general contractor, and insuring positive drainage of all landscape areas. (Refer to Section 32 91 00 Finish Grading & Soil Preparation)

## 2.13 WATER

- A. Water will be available at the site. The landscape contractor will be responsible for the all cost associated with obtaining and transporting any water required to perform his work until the date of final acceptance of the work.

## 2.14 CERTIFICATES OF INSPECTION

- A. Certificates of Inspection shall accompany the invoice for each shipment of plants as may be required by law for transportation. File Certificates with the Landscape Architect prior to acceptance of the material. Inspection by Federal or State Governments at place of growth does not preclude rejection of plants at the site.

## 2.15 FIELD OBSERVATION OF PLANT MATERIALS PRIOR TO DIGGING

- A. The Landscape Architect will observe trees or plants from the bidder's source for acceptability. In the event that the trees or plants are rejected, the Contractor shall pursue and examine other sources of plants until acceptable specimens are found. Such a change will not constitute an increase in cost to the Owner. Additional travel cost for tagging shall be borne by the contractor. Plants shall also be subject to field observation and approval by the Landscape Architect for conformity to specification requirements. Such approval shall not impair the right of inspection and rejection during the progress of the Work. The Contractor shall inform the Landscape Architect in writing of the plants he proposes to supply at least 20 calendar days prior to proposed digging dates.

## 2.16 PREPARATION, HANDLING AND DIGGING

- A. Prepare plants for shipment in a manner that will prevent any damage to the branches, shape or future development of the plant.
  - 1. Protection Against Drying Out: Handle plants so that roots, stems and branches are adequately protected at all times from drying out. Plants that cannot be planted immediately on delivery shall be kept in the shade, well protected with soil, wet moss or other acceptable material and shall be kept well watered. Plants shall not remain unplanted for longer than three (3) days after delivery.
  - 2. Digging: Retain as many fibrous roots as possible.
  - 3. Balled Plants: Plants designated "B & B" shall be adequately balled with firm natural balls of soil in sizes as specified in American Standard for Nursery Stock. Balls shall be firmly wrapped in burlap and securely tied with heavy twine or rope. Plants with loose, broken or manufactured balls will be rejected. Balls shall be lifted from the bottom only, not by stems or trunks.
  - 4. Delivery: All delivery vehicles shall be either enclosed van or covered by tarpaulin. Plants shall not be transported when the temperature is below 20 degrees F.

### PART 3 - EXECUTION

#### 3.1 PLANTING

- A. All plants, deciduous and evergreens, shall be planted at such times of the year as the job may require, with the agreement of the Contractor to guarantee the material as herein specified.

#### 3.2 LAYOUT OF MAJOR PLANTING

- A. Locations for plants and outlines of areas to be planted shall be approved by the Landscape Architect before excavation is begun. Review the applicable architectural and engineering drawings and be familiar with the alignment of underground utilities before digging. The Contractor shall be fully responsible for all damage of utility lines.

#### 3.3 EXCAVATION OF PLANT TRENCHES AND PITS

- A. Dig pits as shown on planting details.
  - 1. Hardpan or Moisture Barrier: All tree pits must be loosened to a depth of two (2) feet below the bottom of the pit or to such depth that any hardpan has been broken and moisture is allowed to move through freely. If in the opinion of the Contractor the drainage is still not sufficiently handled relative to the life of the tree, the Contractor shall notify the Landscape Architect of such in writing before installing the trees in the questionable area; otherwise the Contractor is deemed to be totally responsible for the guarantee and livability of the tree.
  - 2. Notify the Landscape Architect in writing immediately of all/any soil conditions, which the Contractor considers detrimental to growth or survival of plant material. State conditions and submit proposal for correction, including cost of corrections. Obtain approval of method of correction before continuing the affected portion of the Work. Alternate locations may be selected by the Landscape Architect and the Contractor shall prepare such areas with no additional cost to the Owner.
  - 3. Prepare planting pits as specified, and as shown on the drawings, prior to inserting plants.
  - 4. The planting area between the pits shall be filled to the required grade with clean soil from the excavation of the plant areas or with other acceptable soil. Until planting in area is finished, all plant beds shall be neatly edged and kept in this condition until the Work is accepted.
  - 5. Once a tree or shrub is installed, prior to backfilling, the contractor shall place Mycor Tree Saver Transplant (Plant Health Care) Inoculant and Agriform 21 gram Fertilizer tablets around each plant per the rate specified on the drawings or specifications. If application rate is not indicated in the contract documents, contractor shall use the manufacturer's specified rates. Failure on the part of the contractor to provide delivery confirmation information requested above and/or failure on the part of the contractor to perform the work as specified will result in withholding of funds until such work has been successfully completed.
  - 6. Planting beds shall be entirely cleaned of debris, roots, rocks, and vegetation prior to planting. Plants shall be evenly spaced in straight rows and set to finish

grade requirements. Immediately spread pre-emergent herbicide per the manufacturer's recommended rate and apply specified mulch.

### 3.4 SETTING PLANTS

- A. All plants shall be set so that when settled they will occur approximately 2" - 3" above the finished grade and also 2" - 3" above the grade that they bore to the natural grade before transplanting. Each plant shall be planted neatly in the center of the pit, and according to on-center spacing requirements. (Refer to Planting Details).
- B. Set plants plumb and brace rigidly in position until the planting soil mix has been tamped solidly around the ball and roots.
- C. Cut ropes, string or wire from top of the root ball after the plant has been set and lay open the burlap. Remove top third (1/3) of burlap or cloth wrapping and keep intact around the edge of the root ball.
- D. Form shallow saucers to the finished grade outside the tree pit approximately 4" -6" in height capable of holding water about each plant by placing a mound of topsoil around the edge of each filled-in pit.

### 3.5 FINISH GRADE OF PLANTING AREAS

- A. Raise planting areas to conform to specified grades after full settlement has occurred and before mulch has been applied.

### 3.6 WATER

- A. Water (soak) all plants immediately after planting, and continue thereafter as necessary until acceptance of the Work in total.

### 3.7 MULCHING

- A. Immediately after the work of planting and watering has been completed, a layer of mulch as specified above in part 2 shall be placed on the finished surface about the plant. The mulch around isolated plants shall cover the entire area of the pit. Where plants are planted in groups, the area about, as well as the entire area between, the plants shall be covered with mulch.

### 3.8 STAKING, GUYING AND PRUNING

- A. Staking shall be completed immediately after planting. Plants shall stand plumb after staking in accordance with the detail drawings.
- B. Staking Trees: Stake immediately as shown on the drawings after planting and maintain stakes and guying straps until acceptance.
- C. Guying trees taller than 8' shall be done with three (3) guys of guying straps spaced equally about each tree. Each guy shall consist of guying straps attached to the tree trunk at an angle of about 60 degrees and at about two-fifths the height of the tree and anchored to eye bolts attached to planter wall.

- D. Pruning of deciduous material (except sidewalk street trees) shall be limited to the removal of injured twigs and branches. Leave intact the normal shape of the plant unless otherwise directed by the Landscape Architect.
- E. Additional pruning will be required on street trees located in sidewalk planters to allow for visibility to storefront signage. All trees with central leader shall be pruned to a clear trunk height of 8' and all secondary growth (twigs and leaves) shall be removed to a height of 12'. All sidewalk trees with without central leader shall be pruned to remove all secondary branches and leaves to a height of 12'.

### 3.9 INTERIM MAINTENANCE OF TREES AND SHRUBS

- A. Maintenance shall begin immediately after each plant is planted and shall continue until final acceptance of the Work in total by the Landscape Architect with the following requirements:
  - 1. Maintenance of new planting shall consist of pruning, watering, cultivating, weeding, mulching, tightening and repairing of guys, resetting plants to proper grades or upright position, restoration of planting saucer, and furnishing, supplying, and applying such sprays as are necessary to keep the plantings free of insects and diseases. If planting is performed after grass area preparation, proper protection to grass areas shall be provided, and any damage resulting from planting operations repairs promptly. Contractor shall provide interim maintenance until the time of final acceptance of the Work in total by the Landscape Architect upon completion of all Work under this contract.
  - 2. Planting areas and plants shall be protected at all times against trespassing and damages of any kind for the duration of the maintenance period. If any plants become damaged or injured, they shall be treated or replaced as directed by the Landscape Architect at no additional cost to the Owner. No work shall be done within, adjacent to, or over any plant or planting area without proper safeguards and protection to the plant material.
  - 3. The Contractor shall be responsible for keeping all planting and work incidental thereto in good condition by replanting, replacing, watering, weeding, cultivating, pruning, spraying, re-guying, and performing all other necessary operations to care for promotion of root growth and plant life so that work is in satisfactory condition at final acceptance.
  - 4. The root systems of all plants shall be watered at such intervals as will keep the surrounding soil in the best condition for promotion of root growth and plant life.
  - 5. Sidewalks, streets and other paved areas shall be continuously kept clean when planting and maintenance operations are in progress, and the entire work area shall be cleaned at the end of each day's work.

### 3.10 OWNER'S ACCEPTANCE

- A. The completion of the contract will be accepted and Notice of Completion recorded only when the entire contract is completed to the satisfaction of the Landscape Architect.
- B. Within ten (10) days of the Contractor's notification that the installation is complete, the Owner's construction representation will inspect the installation and if a final acceptance is not given, will prepare a "Punch List" indicating work that does not conform to the plans and specifications. Prior to final acceptance, the Contractor shall complete all



items on the punch list. All items on the "Punch List" must be completed before additional "Punch List" trips are provided. Notify the Landscape Architect in writing that all "Punch List" items are complete. All costs associated with additional "Punch List" review trips caused by the contractor's lack of preparation, completion, or neglect will be the responsibility of the Landscape Contractor and pay the Landscape Architect's hourly rate of \$100/ hour for time spent.

### 3.11 TERMINATION OF MAINTENANCE

- A. The Contractor's responsibility for complete maintenance (exclusive of replacement) shall terminate on the date of final acceptance of the Work in total unless the Maintenance Agreement is accepted, whereas the contractor shall continue maintenance of the project for a period of one (1) year following the date of the final acceptance of the work.

### 3.12 MONTHLY INSPECTION

- A. The Contractor shall make monthly inspections, at no extra cost to the Owner, during the guarantee period to determine what changes, if any, should be made in the maintenance program. All such recommended changes shall be submitted in writing to the Landscape Architect and the Owner.

### 3.13 PLANT REPLACEMENT

- A. The Contractor shall replace without cost to the Owner, and as soon as weather conditions permit, all dead plants and all plants not in a vigorous, thriving condition, as determined by the Landscape Architect during and at the end of the one (1) year guarantee period. Replacement shall match adjacent specimens of the same species, and shall be subject to selection in the field by the Landscape Architect prior to digging. Replacements shall be subject to requirements in this specification.

### 3.14 CONTRACTOR LIABILITY

- A. The Contractor shall make all necessary repairs to grades, lawn areas, and paving required because of plant replacements. Such repairs shall be done at no extra cost to the Owner.

### 3.15 REPLACEMENT PLANT ACCEPTANCE

- A. The acceptance of all replacement plants by the Landscape Architect shall terminate the Contractor's liability for such. In the event that a replacement plant dies, the Owner may elect a substitution.

### 3.16 CLEARING OF GROUND

- A. Upon completion of the Work, the grounds shall be cleared of all debris, superfluous materials, and equipment, which shall be entirely removed from the premises to the satisfaction of the Landscape Architect and the Owner.

END OF SECTION

(NOT USED)

## SECTION 32 92 23 - SODDING

### PART 1 - GENERAL

#### 1.1 DESCRIPTION

- A. This section includes provisions of labor, materials and equipment to perform all sodding.

#### 1.2 QUALITY ASSURANCE

- A. **Verification of Dimensions:** Before proceeding with any work, the Contractor shall carefully check and verify all dimensions and planting area conditions and shall immediately inform the Landscape Architect of any discrepancies between the drawings and/or specifications and actual conditions. No work shall be done on any area where there are such discrepancies or where conditions are unsuitable for successful plant material establishment until the Landscape Architect has given approval for it.
- B. The sodding work shall be performed by a competently trained individual or sodding company in accordance with the best standards and practices related to the trade and under the continuous supervision of a competent foreman capable of interpreting the plans and specifications.

#### 1.3 GUARANTEE

- A. The guarantee period for all sodded lawn areas shall begin at the date of final acceptance by the Landscape Architect.
- B. All sod shall be guaranteed by the Contractor for a period of one (1) year beginning at date of final acceptance of the Work in total, provided that the Owner has either contracted with the Contractor for such maintenance or that the Owner has followed the prescribed maintenance procedures and that no such replacements are necessitated by neglect or abuse by the Owner.

#### 1.4 JOB CONDITIONS

- A. Protect adjacent work during sodding operations.
- B. Keep areas clean of trash and debris resulting from sodding operations.

### PART 2 – MATERIALS

#### 2.1 FERTILIZER

- A. See fertilization analysis, rate and frequency recommendations for existing soils prepared by specified testing facility.

## 2.2 SOD

- A. *See Plan for Sod Type*

## 2.3 LIMESTONE

- A. Dolomitic lime.

## PART 3 – EXECUTION

### 3.1 INSPECTION

- A. Examine related work including irrigation and grading surfaces before proceeding with sodding work and inform Landscape Architect in writing of conditions which may prevent the proper execution of this Work. Failure to report unsuitable conditions to the Landscape Architect will constitute acceptance of conditions to perform sodding and no claims will be allowed for additional cost to the Owner.

### 3.2 SOIL PREPARATION

- A. Remove all existing vegetation and dispose of off site.
- B. Rake or "drag" to produce a smooth, even surface, which is free of stones, limbs, clods and debris.
- C. Correct all inequalities and soft spots before sod is laid.
- D. Add dolomitic limestone to area to receive sod (per rate recommended in soils analysis) to (2) days prior to sodding.

### 3.3 SODDING

- A. Transplant (install) sod within 48 hours after harvesting.
- B. Lay sod on a smooth, even surface conforming to finish grade requirements. Thoroughly water area to be sodded.
- C. Lay sod perpendicular to the direction of slope and in a manner, which will permit joints to alternate.
- D. Fit sod pieces together tightly so that no joint is visible.
- E. After sodding is complete and has been approved, roll sod as necessary to achieve a smooth, even surface.

- F. Soak soil using fine spray nozzles to a minimum depth of 4" immediately after sodding. Keep all surfaces continuously moist for 30 calendar days after sod has been laid.

### 3.4 FERTILIZATION

- A. The Contractor shall fertilize all areas sodded at 90-day intervals after installation with nitrogen to insure dark green vigorous growth until final acceptance.

### 3.5 WEEDING

- A. Any concentrated development of weed growth appearing in the sodded lawn areas shall be eradicated.

### 3.6 MAINTENANCE OF LAWN AREAS

- A. Maintenance of grass areas shall consist of watering, weeding, cutting and re-sodding as necessary to establish a uniform stand of grass. Maintenance shall continue until acceptance of the Work.

### 3.7 PROTECTION OF LAWN AREAS

- A. All lawn areas shall be protected until final acceptance. Repair or replace all eroded and damaged areas regardless of cause. Re-sod areas as required to produce uniform grass cover.

### 3.8 FINAL ACCEPTANCE

- A. When the lawns have been established with a uniform cover of grass, as defined by no more than one (1) 1/2" x 1/2" open area in 200 sq. ft., a final inspection of the Work will be made by the Landscape Architect and Owner.
- B. If the Work is found to be satisfactory and in accordance with all requirements of the Contract Documents, the Work will be accepted.
- B. The guarantee period will commence with the date of acceptance of the Work.

END OF SECTION

(NOT USED)