



UNIVERSITY OF
SOUTH CAROLINA

Project Manual

Gateway Column Reconstruction

Minor Construction Project # FY18000712

June 5, 2018

USC Facilities Planning, Design & Construction

1300 Pickens Street

Columbia, SC 29208

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Project Name: USC Gateway Column Reconstruction

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SE-311

INVITATION FOR MINOR CONSTRUCTION QUOTES

PROJECT NAME: USC Gateway Column ReconstructionPROJECT NUMBER: FY18000712PROJECT LOCATION: Univeristy of South Carolina campus (Pendleton St at Bull Street)BID SECURITY REQUIRED? Yes ☐ No ☒PERFORMANCE BOND REQUIRED? Yes ☐ No ☒PAYMENT BOND REQUIRED? Yes ☐ No ☒CONSTRUCTION COST RANGE: \$ \$20,000 - 40,000DESCRIPTION OF PROJECT: Reconstruction of masonry column with pre-cast accent pieces. Substantial completion for this project is set at 50 days. Small and Minority Business participation is strongly encouraged.BIDDING DOCUMENTS/PLANS MAY BE OBTAINED FROM: purchasing.sc.edu "Facilities/Construction"PLAN DEPOSIT AMOUNT: \$ \$0.00

IS DEPOSIT REFUNDABLE

Yes ☐No ☐N/A ☒

Bidders must obtain Bidding Documents/Plans from the above listed source(s) to be listed as an official plan holder. Only those Bidding Documents/Plans obtained from the above listed source(s) are official. Bidders rely on copies of Bidding Documents/Plans obtained from any other source at their own risk.

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: University of South Carolina Facilities Pnanning, Design & ConstructionA/E CONTACT: Emily JonesA/E ADDRESS: Street/PO Box: 1300 Pickens StreetCity: ColumbiaState: SCZIP: 29208-EMAIL: efjones@fmc.sc.eduTELEPHONE: 803-777-7592

FAX: _____

AGENCY: University of South CarolinaAGENCY PROJECT COORDINATOR: Aimee RishADDRESS: Street/PO Box: 1300 Pickens StreetCity: ColumbiaState: SCZIP: 29208-EMAIL: arish@fmc.sc.eduTELEPHONE: 803-777-2261

FAX: _____

PRE-QUOTE CONFERENCE: Yes ☒ No ☐MANDATORY ATTENDANCE: Yes ☐ No ☒PRE-QUOTE DATE: 6/21/2018TIME: 10AMPLACE: 1300 Pickens Street Conf Rm 100C; Cola 29208QUOTE CLOSING DATE: 6/29/2018TIME: 2PMPLACE: 1300 Pickens Street Conf Rm 100C; Cola 29208

QUOTE DELIVERY ADDRESSES:

HAND-DELIVERY:

Attn: Aimee Rish "Bid Enclosed FY18000712"1300 Pickens StColumbia, SC 29208

MAIL SERVICE:

Attn: Aimee Rish, "Bid Enclosed FY18000712"1300 Pickens StColumbia, SC 29208

APPROVED BY: _____

(Agency Project Coordinator)

DATE: _____

SE-331

QUOTE FORM

Quotes shall be submitted only on SE-331.

QUOTE SUBMITTED BY: _____
(Offeror's Name)

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

FOR: PROJECT NAME: USC Gateway Column Reconstruction
PROJECT NUMBER: FY18000712

OFFER

1. In response to the Invitation for Minor Construction Quotes, and in compliance with the Instructions to Bidders for the above-named Project, the undersigned **OFFEROR** proposes and agrees, if this Quote is accepted, to enter into a Contract with the Owner in the form included in the Solicitation Documents, and to perform all Work as specified or indicated in the Solicitation Documents, for the prices and within the time frames indicated in the Solicitation and in accordance with the other terms and conditions stated.
2. Pursuant to Section 11-35-3030(1) of the SC Code of Laws, as amended, **OFFEROR** has submitted Bid Security as follows in the amount and form required by the Solicitation Documents:

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

(Bidder check one)

3. **OFFEROR** acknowledges the receipt of the following Addenda to the Solicitation documents and has incorporated the effects of said Addenda into its Quote (Bidder, check only boxes that apply.):

ADDENDA: ☐ #1 ☐ #2 ☐ #3 ☐ #4 ☐ #5

4. **OFFEROR** agrees that this Quote, including all bid alternates, if any, may not be revoked or withdrawn after the opening of quotes, and shall remain open for acceptance for a period of 60 Days following the Quote Date, or for such longer period of time that **OFFEROR** may agree to in writing upon request of the Owner.
5. **OFFEROR** agrees that from the compensation to be paid, the Owner shall retain as Liquidated Damages the amount of \$ 250.00 for each calendar day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted Contract Time for Substantial Completion, as provided in the Contract Documents.
6. **OFFEROR** herewith submits its offer to provide all labor, materials, equipment, tools of trades and labor, accessories, appliances, warranties and guarantees, and to pay all royalties, fee, permits, licenses and applicable taxes necessary to complete the following items of construction work:

6.1 BASE QUOTE \$ _____
(enter BASE QUOTE in figures only)

6.1.1 ALTERNATE NO. 1 \$ _____ to be **ADDED / DEDUCTED** from BASE QUOTE.
(circle one)

6.1.2 ALTERNATE NO. 2 \$ _____ to be **ADDED / DEDUCTED** from BASE QUOTE.
(circle one)

SC Contractor's License Number: _____

Classification(s) & Limits: _____

Address: _____

Telephone: _____

E-mail: _____

This Quote is hereby submitted on behalf of the Offeror named above.

BY: _____
(Signature of Offeror's Representative)

(Print or Type Name of Offeror's Representative)

TITLE: _____

Instructions to Bidders

1. Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement or Invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders, the bid form, and other sample bidding and contract forms. The Drawings, Specifications and all Addenda issued prior to execution of the Purchase Order.
2. Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.
3. A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.
4. The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids.
5. An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.
6. A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.
7. The Bidder by making a Bid represents that the Bidder has read and understands the Bidding Documents, to the extent that such documentation relates to the Work for which the Bid is submitted, and for other portions of the Project, if any, being bid concurrently or presently under construction.
8. The Bid is made in compliance with the Bidding Documents.
9. The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents.
10. The Bid is based upon the materials, equipment and systems required by the Bidding Documents without exception.
11. Bidders shall use complete sets of Bidding Documents in preparing Bids; neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
12. Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the Architect at least seven days prior to the date for receipt of Bids.

13. Interpretations, corrections and changes of the Bidding Documents will be made by Addendum. Interpretations, corrections and changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon them.
14. The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.
15. No substitution 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. 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.
16. If the Architect approves a proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.
17. No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.
18. Addenda will be issued no later than five days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.
19. Each Bidder shall ascertain prior to submitting a Bid that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.
20. Bids shall be submitted on the forms included with the Bidding Documents.
21. All blanks on the bid form shall be legibly executed in a non-erasable medium.
22. Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.
23. Interlineations, alterations and erasures must be initialed by the signer of the Bid.
24. All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change."
25. 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 be addressed to the party receiving the Bids and 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, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.
26. Bids shall be deposited at the designated location prior to the time and date for receipt of Bids. Bids received after the time and date for receipt of Bids will be returned unopened.

27. The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.
28. The Owner shall have the right to reject any or all Bids. A Bid not accompanied by a required bid security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.
29. It is the intent of the Owner to award a Contract to the lowest qualified Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's own best interests.
30. The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

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.

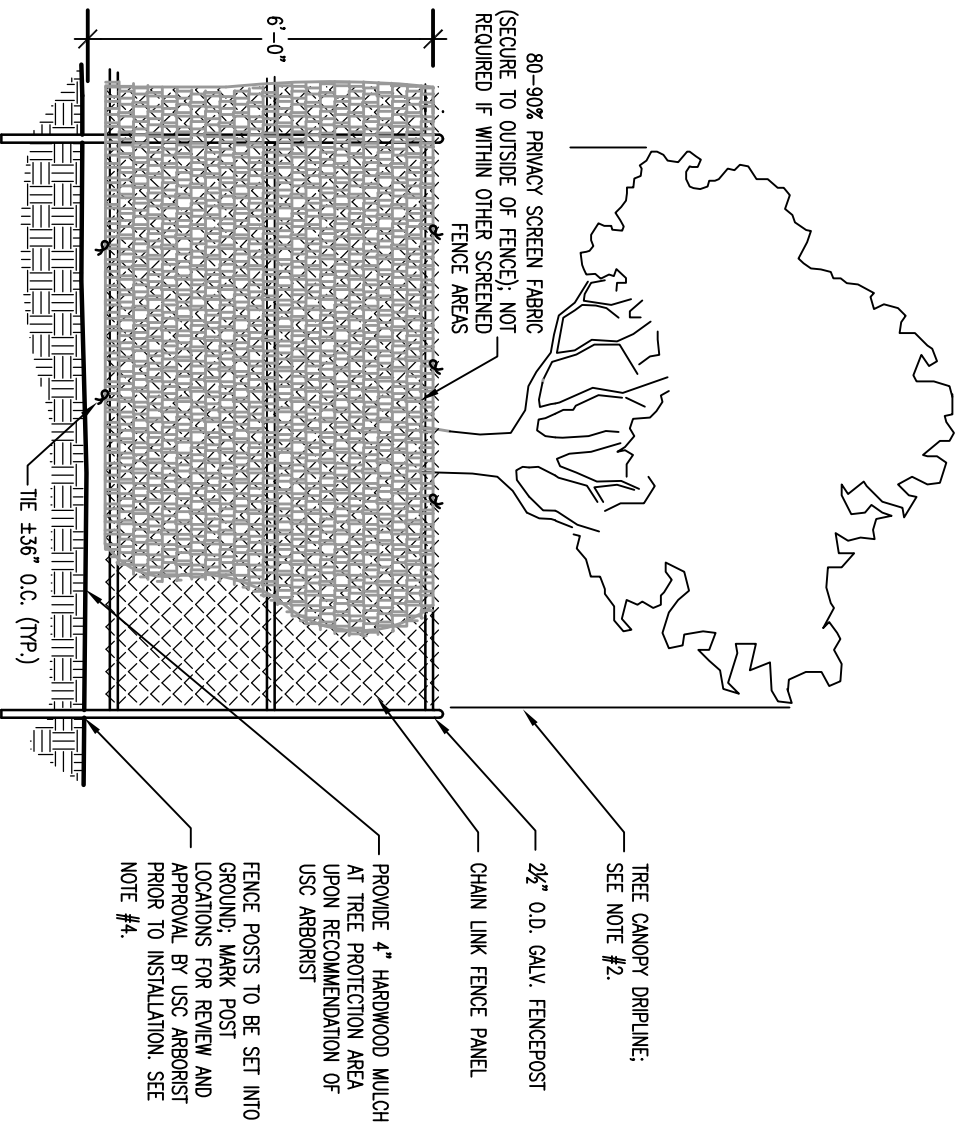
PROJECT EVALUATION & CLOSE-OUT

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.



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.

TREE PROTECTION FENCING (IN-GROUND) WITH SCREENING

NO SCALE REVISED 8.28.14

University of South Carolina
Project Name: USC Gateway Column Reconstruction
Project Number: FY 18000712

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 _____

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.

B. Related Requirements:

1. See USC Supplementary General Conditions for Construction Projects.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Construction of a masonry brick column, with pre-cast concrete accents. Work includes the removal of original footing of damaged column. Disturbance of adjacent asphalt pavement, wall brick, and other elements may be required, and shall be replaced by the contractor at no additional cost to the Owner.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 034500 - PRECAST CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general conditions of the Contract, including supplementary conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Perform all work required to complete, as indicated by the Contract Documents and furnish all supplementary items necessary for the proper installation of Precast Concrete.

1.3 SYSTEM DESCRIPTION SUMMARY

- A. System shall consist of precast concrete installed on Latex thinset mortar setting bed.
- B. The installation shall be absolutely rigid and even large slabs shall not be displaced.

1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C 33: Specification for Concrete Aggregates
 - 2. ASTM C 150: Specification for Portland Cement
 - 3. ASTM C 67: Method of Sampling and Testing Brick and Structural Clay Tile
 - 4. ASTM C 140: Specification for Concrete
- B. T.C.A. Tile Council of America
 - 5. Installation Method Cement Mortar Bonded F102 – 95.
- C. A.N.S.I. American National Standards Institute
 - 1. A- 118.4 Latex Portland Cement Mortar
 - 2. A- 118.6 Grout – Latex

1.5 SUBMITTALS

- A. Submit the following in accordance with the Supplementary General Conditions:
 - 1. Manufacturer's Literature: Material descriptive literature, installation Instructions and panel color selection chart with mortar colors
 - 2. Test Reports: Three (3) copies, showing compliance with specified ASTM requirements.
 - 3. Shop drawings: Detail fabrication and installation of precast concrete units. Indicate locations, dimensions, shapes, and cross-sections of each unit. Indicate joints, reveals, and extent and location of each surface finish.

- a. Indicate locations, tolerances, and details of anchorage devices to be embedded in or attached to structure or other construction.
 - b. Indicate location of each precast unit by same identification mark placed on panel.
 - c. Indicate relationship of precast concrete units to adjacent materials.
 - d. Design modifications: If design modifications are proposed to meet field conditions, submit Shop Drawings. Do not adversely affect the appearance, durability, or strength of units when modifying details or materials, and maintain the general design concept.
4. Samples: Three (3) sample pieces of each manufacturer, type, size and color selected or specified.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
1. All products covered under this Section shall be produced by a single Manufacturer unless otherwise specified.
 2. Manufacturer shall submit evidence of having not less than fifteen (15) years successful production of this product.
 3. The precast manufacturer shall demonstrate, either by proven field performance of the laboratory freeze-thaw test, that the precast units have adequate durability if they are to be subjected to a freeze-thaw environment.
 - a. Satisfactory field performance is indicated when units similar in composition and made with the same manufacturing process as those to be supplied to the purchase do not exhibit objectionable deterioration after at least 3 years.
 - b. The precast units used as the basis for proven field performance shall have been exposed to the same general type of environment, and temperature range as is contemplated for the units supplied to the purchaser.
- B. Subcontractor Qualifications:
1. Subcontractor shall submit evidence of skill and not less than five (5) years specialized experience with this product.
- C. Pre-Installation Conference: Conduct conference at Project site.
- D. Mock-up Installation:
1. Prior to the start of precast concrete work construct mock-ups of each type, size and pattern area for the Owner and Landscape Architect to review. The mock-ups will be at the project site at a location mutually agreed to by the Owner and Contractor.
 2. Construct the mock-up with all setting beds, joints and edge details as shown on the drawings.
 3. After review of the mock-ups, they should be retained and used as a standard of quality for the precast concrete work. At completion of the work, remove the mock-up installations and related materials from the project site. If the mock-ups are incorporated in the actual construction, record their actual location and sizes on the actual built record drawings for the project.

1.7 PROJECT/SITE CONDITIONS

- A. Environmental Requirements: Do no work during freezing weather or on wet or frozen sub-base.
- B. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace precast work damaged by frost or freezing.
- C. Weather Limitations for Mortar and Grout: Comply with the following requirements:
 - 1. Cold-Weather Requirements: Protect precast work against freezing when atmospheric temperature is 40 deg F (4 deg C) and falling. Heat materials to provide mortar and grout temperatures between 40 and 120 deg F (4 and 49 deg C). Provide the following protection for completed portions of work for 24 hours after installation when the mean daily air temperature is as indicated: below 40 deg F (4 deg C), cover with weather-resistant membrane; below 25 deg F (minus 4 deg C), cover with insulating blankets; below 20 deg F (minus 7 deg C), provide enclosure and temporary heat to maintain temperature above 32 deg F (0 deg C).
 - 2. Hot-Weather Requirements: Protect precast work when temperature and humidity conditions produce excessive evaporation of setting beds and grout. Provide artificial shade and windbreaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 100 deg F (38 deg C) and higher.
 - a. When ambient temperature exceeds 90 deg F (32 deg C) with a wind velocity greater than 8 mph (13 km/h), set panels within 1 minute of spreading setting-bed mortar.

1.8 SEQUENCING AND SCHEDULING

- A. Coordinate sequencing and scheduling of work with other supporting, adjacent, contiguous or otherwise related material trades.

1.9 COORDINATION

- A. Precast manufactured pieces shall be incorporated with unit masonry. Coordinate placement and setting with General Contractor and mason.

PART 2 – PRODUCTS

2.1 MATERIALS

Precast Concrete Panels

- 1. Name: Precast Concrete
- 2. Size, Finish and Color shall match that of like pieces at the gateway to the University of South Carolina campus at Bull & Pendleton Streets.

3. Reference Standard:
 - a. Cementitious Materials: Materials shall conform to the following applicable ASTM Specifications
 - 1.) Portland Cement: ASTM C 150 for Portland Cement
 - b. Aggregates shall conform to these ASTM specifications, except that grading requirements shall not necessarily apply:
 - 1.) Normal Weight: ASTM C 33 for Concrete Aggregates
 - c. Other constituents: Coloring pigments, integral water repellents, etc., shall be previously established as suitable for use in concrete and either shall conform to ASTM Standards where applicable, or shall be shown by test or experience not to be detrimental to the durability of the concrete.
4. Performance Requirements:
 - a. Compressive Strength: At the time of delivery to the work site, the average compressive strength shall not be less than 7,000 psi with no individual unit less than 6,500 psi per ASTM C 140.
 - b. Absorption: The average shall not be greater than 6 % per ASTM C140.
 - c. Flexural Strength: Not less than 600 psi per ASTM 293.
 - d. Load carrying capacity: Panel units shall have a tested center load capacity of 1,750 lbs. WT CL96
 - e. Latex Mortar Mix: ANSI A-118.4
 - f. Water: Clean and free of deleterious acids, alkalies or organic materials
 - g. Grout: ANSI A-118.6, Grout – Latex
 - h. Sealant: As specified in Section 07920 – Sealants and Caulking
 - i. Back-up: As specified in Section 07920 – Sealants and Caulking
 - j. Bond Breaker: As specified in Section 07920 – Sealants and Caulking

2.2 MIXING

- A. Latex Portland Cement Mortar setting bed: As recommended by the manufacturer.
- B. Grouting Mix: Latex as recommended by manufacturer. Color as selected by Landscape Architect.
- C. Rework mixes from time to time to maintain proper consistency, as recommended by manufacturer but do not add ingredients. Discard mortar that has reached its initial set.

2.3 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615 /A 615M, Grade 60 (grade 420), deformed.
- B. Steel Welded Wire Fabric: ASTM A 185, plain, cold drawn.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine all surfaces to receive the parts of the work specified herein. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed

- with the work until unsatisfactory conditions have been corrected. Installation of precast concrete panels and associated construction constitutes acceptance of the adjacent and underlying construction.
- B. Installation of Mortar bed as per TCA F102-95. All materials used follows instructions of manufacturer for use in mortar method.
 - C. Install pre-cast concrete panels level, plumb, square and true.
 - D. Grouting shall be in strict accordance with grout manufacturers directions and instructions. Latex or acrylic additives shall be of the same manufacturer of the grout.
 - E. All control and expansion joints shall be installed as per TCA EJ 171-94. All joint materials used shall follow manufacturer's directions and instructions. Mortar and expansion joints shall be 3/8" wide.
 - F. Field cut pre-cast in accordance with manufacturers recommendations for methods, equipment and precautions.

3.2 CLEANING and PROTECTION

- A. Remove and replace precast pieces which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment to eliminate evidence of replacement.
- B. Remove mortar stains and all other types of soiling from exposed panel surfaces, wash and scrub clean.
- C. Provide final protection and maintain conditions in a manner acceptable to installer, which ensures panel work is free of damage or deterioration at time of substantial completion.

END OF SECTION 02520

SECTION 042000 - UNIT MASONRY

PART 1 - GENERAL

1.1 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For each type and color of exposed masonry unit and colored mortar.

1.3 QUALITY ASSURANCE

- A. Sample Panels: Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects. Sample may be incorporated into final work in approval of Architect.

1.4 FIELD 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 TMS 602/ACI 530.1/ASCE 6.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

2.2 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
- B. CMUs: ASTM C 90.
 - 1. Density Classification: Normal weight.
- C. Concrete Building Brick: ASTM C 55.
 - 1. Density Classification: Normal weight.

2.3 BRICK

- A. General: Brick to be 'Cokesbury' by Meridian Brick Company. Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:
 - 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. Clay Face Brick: Facing brick complying with ASTM C 216.
 - 1. Grade: SW.
 - 2. Type: FBS
 - 3. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
 - 4. Size (Actual Dimensions): 3-5/8 inches (92 mm) wide by 2-1/4 inches (57 mm) high by 7-5/8 inches (194 mm) long.

2.4 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C 91/C 91M.
- E. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979/C 979M. Use only pigments with a record of satisfactory performance in masonry mortar.

- F. Colored Cement Products: Packaged blend made from portland cement and hydrated lime or masonry cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.
- G. Color to be equivalent to 'Ivory Buff' by Argos. Sample and mock-up panel to be approved by Owner prior to construction.
- H. Aggregate for Mortar: ASTM C 144.
 - 1. For joints less than 1/4 inch (6 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.
 - 2. White-Mortar Aggregates: Natural white sand or crushed white stone.
 - 3. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- I. Aggregate for Grout: ASTM C 404.
- J. 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.
- K. Water: Potable.

2.5 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, General: ASTM A 951/A 951M.

2.6 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene urethane or PVC.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D 226/D 226M, Type I (No. 15 asphalt felt).
- D. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

2.7 MASONRY CLEANERS

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

2.8 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use portland cement-lime or masonry cement mortar unless otherwise indicated.
 - 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. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.
 - 1. For masonry below grade or in contact with earth, use Type M or Type S.
 - 2. For reinforced masonry, use Type S.
 - 3. For mortar parge coats, use Type N or Type S.
- D. Pigmented Mortar: Use colored cement product:
 - 1. Pigments shall not exceed 10 percent of portland cement by weight.
 - 2. Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.
 - 3. Mix to match Architect's sample.
- E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.
- F. 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 TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, 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. Mix units from several pallets or cubes as they are placed.
- 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 according to ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

3.2 TOLERANCES

- A. Dimensions and Locations of Elements:
 - 1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch (12 mm) or minus 1/4 inch (6 mm).
 - 2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).
 - 3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.
- B. Lines and Levels:
 - 1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet (6 mm in 3 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. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2-inch (12-mm) maximum.
 - 4. 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.
 - 5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2-inch (12-mm) maximum.
- C. Joints:
 - 1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).
 - 2. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch (9 mm) or minus 1/4 inch (6 mm).

3. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm).

3.3 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 cores in hollow CMUs with grout **24 inches (600 mm)** under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.4 MORTAR BEDDING AND JOINTING

- A. Lay hollow brick and CMUs as follows:
 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
 3. Bed webs in mortar in grouted masonry, including starting course on footings.
 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
- B. Lay solid masonry units and hollow brick 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. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.5 COMPOSITE MASONRY

- A. Bond wythes of composite masonry together as follows:
 - a. Where bed joints of both wythes align, use [adder-type reinforcement extending across both wythes or tab-type reinforcement.
 - b. Where bed joints of wythes do not align, use adjustable-type (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. Corners: Provide interlocking masonry unit bond in each wythe and course at corners unless otherwise indicated.
- D. 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 16 inches (406 mm) o.c.

3.6 PARGING

- A. Parge exterior faces of below-grade masonry walls, where indicated, in two uniform coats to a total thickness of 3/4 inch (19 mm). Dampen wall before applying first coat, and scarify first coat to ensure full bond to subsequent coat.
- B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of 1/8 inch per foot (3 mm per 300 mm). Form a wash at top of parging and a cove at bottom.
- C. Damp-cure parging for at least 24 hours and protect parging until cured.

3.7 REPAIRING, POINTING, AND CLEANING

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

3.8 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 24 inches of finished grade.
- B. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042000