

Title and Summary

Invitation to Bid: No. FY10-226
Invitation to Bid Title: Construction of Storage Building-Town of Neeses, S. C.
Invitation to Bid Publication: As follows:

- 01/03/2010 <http://www.orangeburgcounty.org/>
- 01/03/2010 bulletin board, 3rd Fl., Admin. Centre

Invitation Composition: Invitation to Bid No. FY10-226 is composed of the following:

- Title and Summary pages
- Code Articles 1 through 7
- Scope of Work, including subparts:
 - Specifications
 - Drawings
 - Construction Contract Provisions
- Vendor Qualifications and Information
- Evaluation Criteria
- Certified Bid Form
- Addendum Acknowledgement
- Certification of No Exceptions
- Certification of Preference(s)

Invitation Amendments: If any, will be published/posted on the following:

- <http://www.orangeburgcounty.org/>
- Bulletin boards located in/on
 - 3rd Floor Administrative Centre, Procurement

Contracting Entity: Orangeburg County, South Carolina (“Owner”)
A political subdivision of the State of South Carolina

Procurement Coordinator: Procurement Director Jannella Shuler
Orangeburg County Procurement Office
1437 Amelia St. (“Administrative Center”)
Orangeburg SC 29115
(803) 533-6121 Office phone number
(803) 535-2307 Office fax number
jshuler@orangeburgcounty.org

Pre-Submission of Bids

- Requirements: Bidders must attend pre-bid conference. Site visit is recommended
 - Date/Time February 11, 2010 at 10:00 a.m.
 - Location Admin. Centre, 3rd Floor Training Room
- Questions: If bidders have questions, same shall be Directed to Procurement Director
 - Mode of Communication via e-mail only
 - No later than 12-Noon February 19, 2010

Bids:

- Submission Composition: Each submitted bid is required to be composed of the following, including fully completed and executed forms:
 - Code and Articles Acknowledgment
 - Certified Bid
 - Addendum Acknowledgment
 - Vendor’s Certification of Qualifications and Information
 - Certification of No Exceptions
 - Certification of Preference(s)
 - Bid Security
- Submission Deadline: 2:00 p.m. on February 26, 2010
- Submission Location: Administrative Centre, 3rd Floor Procurement Office
- Opening Time: 2:05 p.m. on February 26, 2010
- Opening Location: Administrative Centre, 3rd Floor Training Room

Special Conditions

Intent/Award/Contract:

The intent to award, award, and the contract regarding FY10-226 is subject to the following special conditions:

- Only as stated in the documents that compose the request for proposal

Code and Articles Acknowledgement

Invitation to Bid No. FY10-226 Construction of Storage Building for Town of Neeses, S. C.

Incorporation by Reference.

Articles 1 through 7 of the Code are incorporated by reference as if set forth verbatim in this Request for Proposal. As stated in the Code, by submitting a bid, the vendor agrees that the Code governs this procurement from solicitation through completion of the resulting contract, including disputes, if any.

ACCESS TO CODE. On November 16, 2009, Orangeburg County Council, the governing body of Orangeburg County, repealed all aspects of its procurement policy and enacted the **Orangeburg County Procurement Code** (the "Code"). The Code may be accessed online without charge at <http://www.orangeburgcounty.org/Purchasing/code.html> In addition, a copy of the Code is available for review without charge at the Office of the Procurement Director. If neither of those options meets your needs, a hard-copy of the Code is also available for purchase at the Office of the Procurement Director.

<http://www.orangeburgcounty.org/>_____or

Method of Source Selection.

The source selection method applicable to this procurement is Request for Proposal Construction Services, Code §6-104.

The undersigned vendor understands and agrees to be bound to the Code regarding all matters arising from the Invitation to Bid identified above.

Printed Vendor Name

Signature of Vendor's Authorized Agent

Printed Name of Vendor's Authorized Agent

Title with Vendor of Vendor's Authorized Agent

Scope of Work/Construction Contract Provisions

Request for Proposal No. FY10-226 Construction of Storage Building

Vendor scopes of work proposal costs are effective for 90 days. The scope of work is construction of a an approximately 610 square feet storage building in accordance with the Specifications and Index of drawings included in this package:

- Location of Storage Building-Neeses Town Hall, Neeses, S. C. within the boundaries of Orangeburg County, S. C.

The scope of work involves, but is not limited to, the complete construction of storage building. The successful vendor shall provide all labor, equipment, supplies, etc., to perform the scope of work

As part of the contract, the successful vendor shall be bound by all portions of the Request for Proposal, including those stated in the Invitation and those incorporated by reference in the Invitation.

Construction Contract Provisions

Request for Proposal. FY10-226 Construction – Storage Building

In addition to those portions of the Code regarding contract provisions, the following provisions shall be included in the construction contract, if any, that results from this procurement:

- 1. Time is of the Essence.** Time is of the essence in starting and completing the scope of work, including vendor's use of great energy and diligence in performing the work, taking precautions to avoid delays, keeping on the job workers and materials sufficient to satisfy the Owner that the work is being performed with the utmost rapidity consistent with proper workmanship. In connections with these promises, vendor admits that damages are difficult to properly determine, but in any event, are never less than \$100 a day to the Owner. As a result, vendor agrees to pay Owner a liquidated damages amount of \$100 a day for each day of work after the completion date that work is necessary to complete the scope of work.
- 2. Relationship of Parties.** Vendor and vendor's subcontractors are independent contractors, and shall not be deemed the agents or employees of the Owner for any purpose whatsoever. Vendor shall not hold itself out to third parties as anything other than an independent contractor, and vendor shall have no power or authority to bind or obligate the Owner in any manner. Consistent with the independent contractor status of vendor, vendor shall be liable for and pay all taxes required by local, state or federal governments, including but not limited to Social Security, Workers' Compensation Employment Security, and any other required taxes and licenses. The Owner shall pay no employee benefits of any kind to or for the benefit of vendor or vendor's employees, agents, and servants.
- 3. Insurance.** Vendor shall maintain the following insurance coverage's which shall begin no later than the first day of vendor's performance of the work and shall end no later than the last day that vendor has any person on the job site in connection with the performance of the work:
 - a.** Workers compensation insurance for *all individuals* who are on the work site at the request or direction of vendor. For clarification, "all individuals" as used in this provision literally includes *all persons*, whether or not the person is vendor's employee. For example, if vendor uses subcontractor(s), vendor shall verify in advance of allowing workers on the job site that all persons on the job site as a result of the subcontract(s) are covered by worker's compensation insurance.
 - b.** General liability insurance for bodily injury and death (i) commensurate with the risks associated with the scope of work and (ii) acceptable to County.
 - c.** Property casualty and premises liability insurance (i) commensurate with the risks associated with the scope of work and (ii) acceptable to the County.
- 4. Worker Safety.** Consistent with the independent contractor status of vendor, vendor (i) shall comply with all applicable worker safety laws, specifically including OSHA, and (ii) shall bear sole responsibility for the safety and health of all workers on the job.

5. **Conferences.** Vendor shall participate in the following conferences:

- a. **Pre-Construction Conference.** After award and prior to commencement of any work, Owner shall hold a pre-construction conference with the vendor. The vendor shall see that responsible company management representatives and key project personnel attend this meeting. At this conference, vendor shall be oriented with respect to the Owner's procedures and lines of authority and with respect to contract administration and construction matters. The vendor shall make known its key personnel and their respective duties and responsibilities. Additionally, a schedule of required submittals will be discussed.
- b. **Progress Conferences.** Owner may schedule progress conferences to review the overall progress of the work, the vendor's schedule, and to discuss any problems that have arisen or are anticipated, etc. The vendor may request a progress conference with Owner by written notice.

As to Owner-originated conferences, Owner shall coordinate and preside over the conferences and, if Owner deems it appropriate, Owner may prepare agenda, and record minutes, and distribute to vendor a written decision on a conference issue.

If vendor holds a meeting with vendor's subcontractor(s), vendor shall immediately supply Owner with a copy of minutes of such each meeting.

6. **Job-Site Security.**

Vendor shall be solely responsible for security on the job site against such acts as mischief, violence, burglary, arson, vandalism, etc. In addition, vendor shall secure the job site, including materials delivered or stored thereon, against damage by acts of nature and man. Vendor shall protect the work at all times by approved methods and, as between Owner and vendor, bear sole responsibility for any damage to work in place. Vendor shall bear sole responsibility for the safekeeping of materials and protection of the public during the entire construction period, including adequate safeguards to ensure that only persons covered by worker's compensation or the Owner's employees are allowed on the construction site.

7. **Pre-Construction Photographs.**

If Owner notifies vendor that Owner deems it necessary, vendor must take project photographs of the work area to record existing conditions. All conditions that might later be subject to disagreement shall be shown in sufficient detail to provide a basis for decisions. The photographs shall include the date and time marking of the recording. All photographs shall be labeled on a tab connected to the bottom of the photo to indicate date and description of work shown. Photographs shall be submitted in plastic sleeves, pre-punched for a 3-ring binder. Pre-construction photographs shall be submitted to the Owner within fourteen (14) calendar days after the date of receipt by the vendor of Notice to Proceed.

Note: A time stamped videotape may be substituted for the photographs if approved by the Owner's representative

8. **Field Offices and Sheds.**

- a. **Field Office:** Vendor is not required to have a job-site field office; however, vendor may have a job-site office as long as it is (i) at no cost, directly or indirectly, to Owner, (ii)

approved and coordinated with Owner, and (iii) vendor removes same at the conclusion of work and leaves grounds in same condition as grounds were in prior to use of job-site office. Owner recommends vendor's field supervisor be continuously equipped during work hours with a truck or utility vehicle and radio or cellular phone capabilities.

- b. Temporary Sheds:** Vendor is not required to have temporary sheds; however, vendor may have temporary shed(s) as long as same is (i) at no cost, directly or indirectly, to Owner, (ii) approved and coordinated with Owner, and (iii) vendor removes same at the conclusion of work and leaves grounds in same condition as grounds were in prior to use of temporary shed(s).
- 9. Sanitary Facilities.** Prior to beginning work, vendor shall cause the work site to be equipped with sanitary facilities for the field work force. Vendor shall provide and maintain temporary toilet facilities on the project site sufficient to meet the needs of those persons on the project site. Toilets shall be either (i) temporary types complete with water and sewage connections or (ii) portable types approved by the relevant jurisdictional authority. Vendor shall remove temporary toilet facilities from the project site upon completion of the scope of work.
- 10. Temporary Utilities.** Vendor shall make arrangements to provide all water or any other utilities that vendor may require in connection with performance of the scope of work. If water is taken from a fire hydrant for any reason, vendor shall use a hydrant meter as required by the County.
- 11. Protections.** Prior to beginning work, vendor shall have in place and maintain throughout performance of the work policies to protect the following:
 - a. Historical or Archeological Materials.** Should the vendor's operations uncover artifacts of possible historical or archaeological significance, vendor shall immediately (i) temporarily discontinue operations in the affected area and (ii) advise the Owner. The Owner shall handle the matter with archaeological authorities. Vendor is cautioned that, whether or not ultimately determined to be of historical or archaeological value, such artifacts are not the property of vendor and vendor is not to remove same from the site without Owner's written permission.
 - b. Buffers and Trees.** Any vegetative buffer zones so designated on project drawings shall be protected and, unless specifically indicated on the drawings, **no construction activity** shall be permitted in any such areas. In the event of an intrusion into a buffer zone, vendor will be responsible for all costs associated with restoration, including fines, legal fees, etc. Vendor shall not perform said restoration work, but, instead, will be required to pay Owner for all costs associated with retaining experts with appropriate skills to assess and perform the restoration. In addition, Vendor shall be liable for damaged or destroyed trees. Damage assessment shall be based on replacement value of equivalent, installed trees that are satisfactory to the governing agencies.
 - c. Environmental Sensitivities and Hazards.** Vendor shall act in accordance with any and all applicable state and federal laws, statutes, regulations, etc., regarding environmental sensitivities and hazards (herein "Applicable Environmental Laws"). Vendor shall indemnify and hold the owner harmless from any and all losses, expenses, damages, demand, penalties, and claims asserted against or sustained by the Owner as the result of or alleged to be the result of vendor's failure to act in accordance with Applicable

Environmental Laws.

Without limiting the foregoing, Owner specifically notifies vendor of the following:

- (i) Pollutants such as fuels, lubricants, bitumen, and other harmful materials shall not be discharged on the ground or into the existing area drainage system.
- (ii) Wash water or wastes from concrete or other mixing operations shall not be allowed to enter live streams or rivers, or stream or riverbeds.
- (iii) Vendor shall comply with guidelines of the SCDHEC "***Storm Water Management and Sediment Control Handbook***" (***latest edition***) during the entire construction period. Sediment and erosion control practices shall, where best practices indicate, include temporary sediment basins, silt fence, etc.
- (iv) If it is necessary during the performance of the work to interrupt existing natural surface drainage patterns, vendor shall take all necessary measures to protect and preserve the natural drainage-ways or to provide temporary drainage routing until the natural drainage pattern can be restored. Vendor will, at all times, maintain proper drainage in connection with its performance of the scope of work. Owner urges vendor to use tracked equipment where possible to prevent rutting and displacement of the existing natural grade.
- (v) Vendor shall become familiar with the drainage characteristics of the project site, maintain existing ditches and/or create new, temporary ditches as necessary to maintain construction access, and grade and/or re-grade the site as necessary to divert surface runoff away from work areas.

- d. Public Access.** Vendor shall minimize interference and inconvenience to the occupants of nearby or adjoining properties, including performance of work at hours and in a manner that does not endanger property or persons, allowing safe passage of residents to and from their homes or work sites, especially during inclement weather.
- e. Existing Utilities; Obstructions; Pavement.** Vendor shall not interrupt existing utilities serving facilities occupied or used by others, except (i) when permitted in writing by the Owner and the respective utility and (ii) then only after acceptable temporary utility services have been provided.

Vendor is hereby on notice that numerous underground obstructions may exist within the work area. Vendor shall verify the existing topographic and existing utility locations, both horizontal and vertical, prior to beginning any work. Should the vendor find any discrepancies, vendor shall immediately notify the Owner. Vendor shall use reasonable care when excavating, including locating existing underground utilities in the work area prior to performing work in that area. If utilities are to remain in place, vendor shall provide adequate means of protection of same during all operations. Vendor shall be solely responsible for any damage to existing facilities, including damages to above ground or underground utilities owned by third parties.

Should uncharted or incorrectly charted utilities be encountered during excavation, prior to proceeding, vendor shall (i) immediately notify the Owner, (ii)

cooperate with Owner and utility companies in keeping respective services and facilities in operation, and (iii) repair damaged utilities to the satisfaction of utility companies.

In-Place Work. Vendor shall (i) protect in-place work during all stages of construction from damage due to inclement weather, vandalism, theft, and adjacent work activities performed by others, as may be applicable, (ii) erect temporary barricades, security fences, and provide watchmen as may be necessary to prevent damage/delay from vandalism, theft, and any other potential loss, or public hazard.

If applicable, vendor shall coordinate with others performing work on the Owner's property by (i) becoming familiar with the activities of others that could impact the scope of work Schedule and (ii) making arrangements with others as necessary to prevent damage/delay caused by the work activities of others.

- f. Disposal of Materials.** Vendor shall properly dispose of materials from the project site. Vendor shall not cause or allow the burning of debris. Vendor shall cause to be removed all debris by a hauling it away from the work site in an acceptable manner and disposing of it at an approved site. Vendor shall maintain the construction site clean and free from an accumulation of debris during construction, including removal of same on a daily basis and, at the completion of the work, clean entire work area. Vendor shall comply with all applicable local, state or federal laws regarding debris removal and disposal. Vendor shall indemnify and hold the Owner harmless from any and all losses, expenses, damages, demands, penalties, and claims asserted against or sustained by the Owner as a result of or alleged to be the result of illegal, improper, or unauthorized disposal of material off of the Owner's property.
- 12. Licensing/Permits.** Vendor and any vendor subcontractor must comply with the regulations promulgated in the State of South Carolina General and Mechanical Contracting Act as enforced by the South Carolina Licensing Board for Contractors. All contractors shall, therefore, be in compliance with licensing requirements for to perform the scope of work. Both the vendor and vendor subcontractors, if any, are responsible for obtaining applicable work permits and business licenses from the appropriate jurisdictional authorities. Contractor's License Number and Person's Name and Business Name must be shown together on any such license.
- 13. Construction Access.** If applicable, the vendor and its subcontractors shall enter and exit the job site as shown on the drawings or as designated by Owner
- 14. Work Site Cleanliness.** During construction, vendor shall keep the work site, areas adjacent to the work site, and access roads in an orderly condition, free and clear from debris and discarded materials. See Disposal of Materials, above. plant, buildings, debris, unused materials, concrete forms and other like materials that do not belong to the Owner. If vendor or vendor's subcontractors fail to clean up at the completion of the work, the Owner may do so and the cost therefore shall be charged to the vendor as a set-off against Owner's final payment to vendor.
- 15. Site Preparation.** This section applies to site preparation, including the mucking of unsuitable materials and replacement with suitable materials, and compacted in place.

 - a.** Unless specified within the scope of work and specifications, vendor must notify the Owner, in writing, prior to undertaking such work and provide verification that

recommended removal and replacement is necessary. The notification shall include cross-sections showing original ground-line and line of removal and replacement of the topsoil, which is included in the estimated price.

- b. An estimate of the amount of mucking replacement shall be included in the notification. Final amount to be paid shall be based on the cross-sections prepared by the Contractor with the final excavation included. Vendor shall request any unspecified mucking of unsuitable materials on a change order. No claims for additional cost shall be valid unless authorized in accordance with the level of authority and procedure set forth in the Code. Vendor's cubic yard fill cost shall be for mucking of unsuitable material, replacement and compaction with suitable material.

16. Owner-Furnished Materials; Salvage. There will be no Owner-furnished materials. If materials are salvaged, the materials shall be the property of Owner.

17. Owner Inspection and Testing. All work (which term includes, but is not restricted to materials, workmanship, manufacture and fabrication of components) shall be subject to inspection and test by the Owner at all reasonable times and places prior to acceptance. Any such inspection and test is for the sole benefit of the Owner and shall not relieve vendor of the responsibility of providing quality supplies to comply with the scope of work and specifications. No inspection or tests by the Owner shall be construed as constituting or implying acceptance. Inspection or test shall not relieve vendor of the responsibility for damage to or loss of the material prior to acceptance nor in any way affect the continuing rights of the Owner after acceptance of the completed work. Vendor shall, without charge to Owner, replace any material or correct any workmanship found by the Owner not to conform to the requirements, unless the Owner consents in writing to accept such material and workmanship with an appropriate adjustment in price. Vendor shall promptly remove rejected material from the premises. At the completion of the work, accompany a representative of Owner on a final inspection of work and, based on that inspection, correct all defects in the work prior to submitting for or receiving final payment.

18. Warranties and Guarantees. In addition to any warranties provided by state and/or federal law, the vendor warrants and guarantees to Owner as follows:

- a. All equipment, materials and articles incorporated in the work and supplied by the vendor are to be new and of the most suitable for the purpose intended. Unless otherwise specifically provided elsewhere in this Invitation to Bid, reference to any equipment, material, article or patented process, by trade name, make or catalog number, shall not be construed as limiting competition. When requested, vendor shall furnish to the Owner for approval, the name of the manufacturer, the model number, and other identifying data and information respecting the performance, capacity, nature and rating of the machinery and mechanical and other equipment that vendor plans to incorporate in the work. When required by this Request for Proposal or when called for by the Owner for approval, vendor shall supply to Owner full information concerning such. When so directed, samples shall be submitted for approval at vendor's expense, with all shipping charges prepaid. Machinery, equipment, materials and articles installed or used without required approval shall be at the risk of

subsequent rejection.

- b. Vendor shall cause all work to be performed in a skillful and workmanlike manner. The Owner may, in writing, require vendor to remove from the work any person the Owner deems objectionable.
- c. The work for a two (2) year period from date of completion, including the following guarantee: that the work is free from defects of workmanship, and that vendor shall be responsible for and make good any damage caused by such defect(s).

19. Suspension of Work by Owner. The Owner may temporarily suspend vendor's work when Owner reasonably believes that satisfactory results cannot be obtained because of unfavorable field conditions.

20. Written Notice. Written notice shall be deemed to have been duly served if delivered in person to an individual or member of the firm or entity or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified mail to the last business address known to him who gives the notice.

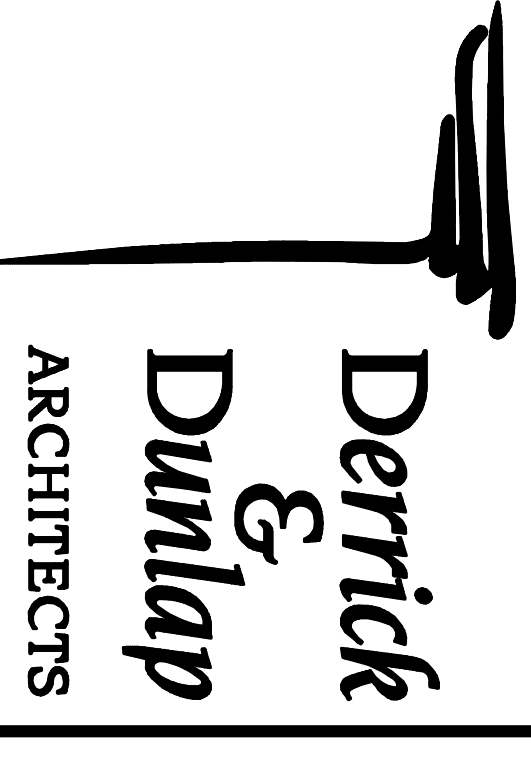
21. Damage to One Party's Assets by Other Party. Should either vendor or Owner suffer injury or damage to person or property because of any act or omission of the other party or of any of the other party's employees, agents or others for whose acts the party is legally liable, the claim shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

22. Retention of Records. Vendor agrees to maintain for three (3) years from the date of final payment, and when all other pending matters are closed, all books, documents, papers, and records pertinent to this project. Vendor agrees to provide to the Owner or Owner's designee access to such books, documents, papers, and records for the purposes of examining, auditing, and copying them. For purposes of this provision, access means at a suitable location within Orangeburg County. Vendor further agrees to include these provisions in any subcontracts vendor enters in connection with this project.

23. Gratuities and Kickbacks.

- a. **Gratuities:** It shall be unethical for any person to offer, give or agree to give any employee or former employee, or for any employee or former employee to solicit, demand, accept, or agree to accept from another person a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation or any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter pertaining to any program requirement or a contract or subcontract, or to any solicitation or proposal therefore. Vendor shall not engage in the foregoing unethical conduct.
- b. **Kickbacks:** It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor, or to hire any subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order. Vendor shall not engage in the foregoing unethical

conduct.



VIA, Inc. (dba)

STORAGE BUILDING FOR TOWN OF NEESES

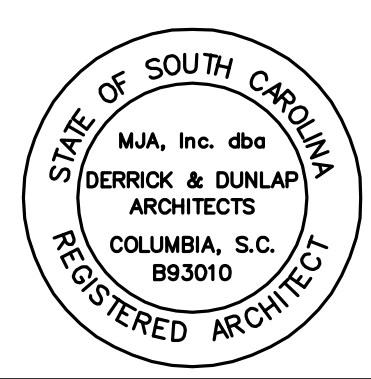
ORANGEBURG COUNTY, SOUTH CAROLINA

DERRICK & DUNLAP, ARCHITECTS

INDEX OF DRAWINGS:

- A1 FLOOR PLAN, SECTIONS & ELEVATIONS
- A2 DOOR SCHEDULE & DETAILS

P.O. BOX 84
COLUMBIA, SC 29202
PHONE: 803-799-5472
FAX: 803-799-5590



SHEET TITLE	
TITLE SHEET	
IMPROVEMENTS FOR ORANGEBURG COUNTY	
ORANGEBURG COUNTY, SOUTH CAROLINA	

REVISION		
DATE	DESCRIPTION	BY
2-4-07	ISSUED FOR BIDDING	SAJ

This drawing and the design shown thereon are the property of Derrick & Dunlap, Architects. The reproduction, copying, or use of this without their written consent is prohibited and any infringement will be subject to legal action.

DATE: 12-4-07
PROJECT NO:
SHEET NO:
T1
1 of 1

SECTION 16050

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1.

GENERAL

a.

SECTION INCLUDES

- i. Existing work.
- ii. Grounding and bonding.
- iii. Connection of utilization equipment.
- iv. Supports.
- v. Identification.

b.

SUBMITTALS

- i. Product Data: Provide catalog data for grounding and bonding devices.

c.

REGULATORY REQUIREMENTS

- i. Conform to requirements of ANSI/NFPA 70.
- ii. Furnish products listed by Underwriters Laboratories, Inc. or other testing firm acceptable to authority having jurisdiction.

d.

COORDINATION

- i. Obtain and review shop drawings, product data, and manufacturer's instructions for equipment furnished under other Sections to determine connection locations and requirements.
- ii. Sequence rough-in of electrical connections to coordinate with installation and start-up of equipment furnished under other Sections.

PART 2.

PRODUCTS

a.

GROUNDING MATERIALS

- i. Ground Rod: Copper 3/4 inch diameter x 10 feet length.
- ii. Mechanical Connectors: Bronze.

b.

BASIC MATERIALS

- i. Steel channel: Galvanized or painted steel.
- ii. Miscellaneous Hardware: Treat for corrosion resistance.

- iii. Nameplates: Engraved three-layer laminated plastic, black letters on white background.
- iv. Wire and Cable Markers: Cloth markers, split sleeve or tubing type.

PART 3. EXECUTION

a. INSTALLATION

- i. Install Products in accordance with manufacturer's instructions.
- ii. Install ground electrodes at locations indicated. Install additional rod electrodes as required to meet Regulatory Requirements.
- iii. Provide grounding electrode conductor and connect to reinforcing steel in foundation footing. Bond steel together.
- iv. Provide bonding to meet Regulatory Requirements.
- v. Provide isolated equipment grounding conductor for circuits supplying personal computers.
- vi. Make electrical connections to utilization equipment in accordance with equipment manufacturer's instructions.
 - (1) Verify that wiring and outlet rough-in work is complete and that utilization equipment is ready for electrical connection, wiring, and energizing.
 - (2) Make wiring connections in control panel or in wiring compartment of pre-wired equipment. Provide interconnecting wiring where indicated.
 - (3) Install and connect disconnect switches, controllers, control stations, and control devices as indicated.
 - (4) Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit in damp or wet locations.
 - (5) Install pre-fabricated cord set where connection with attachment plug is indicated or specified, or use attachment plug with suitable strain-relief clamps.
 - (6) Provide suitable strain-relief clamps for cord connections to outlet boxes and equipment connection boxes.
- vii. Install support systems sized and fastened to accommodate weight of equipment and conduit, including wiring, which they carry.
 - (1) Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors and beam clamps.
 - (2) Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood

- construction.
- (3) Do not fasten supports to piping, ceiling support wires, ductwork, mechanical equipment, or conduit.
 - (4) Do not use powder-actuated anchors.
 - (5) Do not drill structural steel members.
 - (6) Fabricate supports from structural steel or steel channel.
 - (7) Install free-standing electrical equipment on concrete pads.
 - (8) Install surface-mounted cabinets and panelboards with minimum of four anchors.
 - (9) Provide steel channel supports to stand cabinets 1 inch off wall in wet locations.
 - (10) Bridge studs top and bottom with channels to support flush-mounted cabinets and panelboards in stud walls.
- viii. Identify electrical distribution and control equipment, and loads served, to meet regulatory requirements and as indicated.
- (1) Degrease and clean surfaces to receive nameplates and tape labels.
 - (2) Secure nameplates to equipment fronts using screws, rivets, or adhesive, with edges parallel to equipment lines. Secure nameplate to inside face of recessed panelboard doors in finished locations.
 - (3) Use nameplates with 1/8 inch lettering to identify individual switches and circuit breakers, wall switches, receptacle circuits, and loads served.
 - (4) Use nameplates with 1/4 inch to identify distribution and control equipment.
- ix. Install wire markers on each conductor in panelboard gutters, pull boxes, and at load connections.
- (1) Use branch circuit or feeder number to identify power and lighting circuits.
 - (2) Use control wire number as indicated on equipment manufacturer's shop drawings to identify control wiring.
- x. Provide an operation and maintenance manual to owner. This manual shall relate to the design, operation and maintenance of the building electrical system. This manual shall consist of the following:
- a. A single-line diagram of the "as built" building electrical system. This system shall indicate the locations of check-metering access.
 - b. Schematic diagrams of electrical control systems (other than HVAC, covered elsewhere).
 - c. Manufacturer's operational and maintenance information for electrical equipment.

END OF SECTION

SECTION 16110

RACEWAYS

PART 1. GENERAL

a. SECTION INCLUDES

- i. Conduit and fittings.
- ii. Surface raceway.
- iii. Electrical boxes.
- iv. Service fittings.

b. REGULATORY REQUIREMENTS

- i. Conform to requirements of ANSI/NFPA 70.
- ii. Box mounting heights conform to requirements of ADA.
- iii. Furnish products listed by Underwriters Laboratories, Inc. or other testing firm acceptable to authority having jurisdiction.

PART 2. PRODUCTS

a. PRODUCT REQUIREMENTS

- i. Use only specified raceway in the following locations:
 - (1) Installations In or Under Concrete Slab, or Underground Within Five Feet From Foundation Wall: Plastic conduit.
 - (2) Exposed Outdoor Locations: Rigid steel conduit. Use threaded or raintight fittings.
 - (3) Concealed Dry Interior Locations: Electrical metallic tubing.
 - (4) Exposed Dry Interior Locations: Rigid steel conduit or Electrical metallic tubing.
- ii. Size raceways for conductor type installed or for type THW conductors, whichever is larger.
 - (1) Minimum Size Conduit: 1/2-inch.

b. CONDUIT AND FITTINGS

- i. Conduit:
 - (1) Metal Conduit and Tubing: Galvanized steel.
 - (2) Flexible Conduit: Steel.
 - (3) Liquidtight Flexible Conduit: Flexible conduit with PVC jacket.
 - (4) Plastic Conduit and Tubing: NEMA TC 2; PVC. Use Schedule 40 conduit.

- ii. Conduit Fittings:
 - (1) Metal Fittings and Conduit Bodies: NEMA FB 1.
 - (2) Plastic Fittings and Conduit Bodies: NEMA TC 3.

c. **ELECTRICAL BOXES**

- i. Boxes:
 - (1) Sheet Metal: NEMA OS 1; Galvanized steel.
 - (2) Cast Metal: Cast alloy, deep type, gasket cover, threaded hubs.
 - (3) Nonmetallic: NEMA OS 2.

PART 3. EXECUTION

a. **EXAMINATION AND PREPARATION**

- i. Verify that supporting surfaces are ready to receive work.
- ii. Electrical boxes are shown on Drawings, in approximate locations, unless dimensioned.
 - (1) Obtain verification from Architect/Engineer of floor box locations, and locations of outlets in offices and work areas, prior to rough-in.

b. **INSTALLATION**

- i. Arrange conduit to maintain headroom and to present neat appearance.
 - (1) Route exposed raceway parallel and perpendicular to walls and adjacent piping.
 - (2) Maintain minimum 6 inch clearance to piping and 12 inch clearance to heat surfaces such as flues, steam pipes, and heating appliances.
 - (3) Maintain required fire, acoustic, and vapor barrier rating when penetrating walls, floors, and ceilings.
 - (4) Route conduit through roof openings for piping and ductwork where possible; otherwise, route through roof jack with pitch pocket.
 - (5) Group in parallel runs where practical. Use rack constructed of steel channel. Maintain spacing between raceways or derate circuit ampacities to NFPA 70 requirements.
 - (6) Use conduit hangers and clamps; do not fasten with wire or perforated pipe straps.
 - (7) Use conduit bodies to make sharp changes in direction.
 - (8) Terminate conduit stubs with insulated bushings.
 - (9) Use suitable caps to protect installed raceway against entrance of dirt and moisture.
 - (10) Provide No. 12 AWG insulated conductor or suitable pull string in empty raceways, except sleeves and nipples.
 - (11) Install expansion-deflection joints where raceway crosses building expansion joints.
 - (12) Install plastic conduit and tubing in accordance with

manufacturer's instructions.

- ii. Install surface metal raceway and multi-outlet assemblies in accordance with manufacturer's instructions.
 - (1) Use flat-head screws or clips and straps suitable for the purpose, to fasten channel to surfaces. Mount plumb and level.
 - (2) Use suitable insulated bushings and inserts at connections to outlets and corner fittings in metal raceway.
 - (3) Use fittings and accessories designed for use with raceway system.

- iii. Install auxiliary gutter and wireway in accordance with manufacturer's instructions.

- iv. Install electrical boxes as shown on the drawings, and as required for splices, taps, wire pulling, equipment connections and regulatory requirements.
 - (1) Use cast outlet box in exterior locations [exposed to weather] and wet locations.
 - (2) Use hinged cover enclosure for interior pull and junction box larger than 12 inches in any dimension.
 - (3) Locate and install electrical boxes to allow access. Provide access panels if required.
 - (4) Locate and install electrical boxes to maintain headroom and to present neat mechanical appearance.
 - (5) Install pull boxes and junction boxes above accessible ceilings or in unfinished areas.
 - (6) Provide knockout closures for unused openings.
 - (7) Align wall-mounted outlet boxes for switches, thermostats, and similar devices.
 - (8) Install lighting outlets to locate luminaires as shown on reflected ceiling plan.

- v. Use recessed outlet boxes in finished areas and where indicated.
 - (1) Secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness.
 - (2) Use stamped steel stud bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes.
 - (3) Do not install boxes back-to-back in walls; provide 6 inches separation, minimum; except provide 24 inches separation, minimum in acoustic-rated walls.
 - (4) Do not damage insulation.

- vi. Install floor boxes in accordance with manufacturer's instructions.
 - (1) Set boxes level and flush with finish flooring material.
 - (2) Use cast floor boxes for installations in slab on grade.

- vii. Install service fittings in accordance with manufacturer's instructions.

END OF SECTION

SECTION 16120

WIRES AND CABLES

PART 1. GENERAL

a. SECTION INCLUDES

- i. Wire and cable.
- ii. Wiring devices.
- iii. Service fittings.

b. QUALITY ASSURANCE

- i. Perform Work in accordance with NECA Standard of Installation.

c. REGULATORY REQUIREMENTS

- i. Conform to requirements of NFPA 70.
- ii. Furnish products listed by UL or other testing firm acceptable to authority having jurisdiction.

PART 2. PRODUCTS

a. WIRING METHODS

- i. Concealed Interior Locations: Building wire in raceway.
- ii. Exposed Interior Locations: Building wire in raceway.
- iii. Above Accessible Ceilings: Building wire in raceway.
- iv. Wet or Damp Interior Locations: Building wire in raceway.
- v. Exterior Locations: Building wire in raceways.
- vi. Underground Locations: Building wire in raceway.
- vii. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 14 AWG for control wiring. Use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 75 feet; and for 20 ampere.

b. WIRE AND CABLE

- i. Building Wire:
 - (1) Feeders and Branch Circuits Larger Than 6 AWG: Copper, stranded conductor, 600 volt insulation, THHN/THWN.

- (2) Feeders and Branch Circuits 6 AWG and Smaller: Copper conductor, 600 volt insulation, THHN/THWN. 6 and 8 AWG, stranded conductor; smaller than 8 AWG, solid conductor.
- (3) Control Circuits: Copper, stranded conductor, 600 volt insulation, THW.

c. **WIRING DEVICES AND WALL PLATES**

- i. Single Pole Switch:
 - (1) P&S Model 521-I.
 - (2) Substitutions by prior approval.
- ii. Three-way Switch:
 - (1) P&S Model 523-I.
 - (2) Substitutions by prior approval.
- iii. Duplex Convenience Receptacle:
 - (1) P&S Model 5352-I.
 - (2) Substitutions by prior approval.
- iv. GFCI Receptacle:
 - (1) P&S Model 1591-SI.
 - (2) Substitutions by prior approval.
- v. Decorative Cover Plate:
 - (1) Description: Ivory smooth plastic.
- vi. Weatherproof Cover Plate:
 - (1) Description: Gasketed cast metal with hinged gasketed device cover.

PART 3. EXECUTION

a. **EXAMINATION AND PREPARATION**

- i. Verify that interior of building is physically protected from weather.
- ii. Verify that mechanical work which is likely to injure conductors has been completed.
- iii. Completely and thoroughly swab raceway system before installing conductors.

b. **INSTALLATION**

- i. Neatly train and secure wiring inside boxes, equipment, and panelboards.
- ii. Use wire pulling lubricant for pulling 4 AWG and larger wires.
- iii. Support cables above accessible ceilings to keep them from resting on ceiling tiles.

- iv. Make splices, taps, and terminations to carry full ampacity of conductors without perceptible temperature rise.
- v. Terminate spare conductors with electrical tape.
- vi. Install wiring devices in accordance with manufacturer's instructions.
 - (1) Install wall switches 48 inches above floor, OFF position down.
 - (2) Install convenience receptacles 18 inches above floor, grounding pole on bottom.
 - (3) Install cord and attachment plug caps on equipment under the provisions of Section 16050. Size cord for connected load and rating of branch circuit overcurrent protection.
- vii. Install wall plates flush and level.
 - (1) Install decorative plates on switch, receptacle, and blank outlets in finished areas, using jumbo size plates for outlets installed in masonry walls.
 - (2) Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets.

END OF SECTION

SECTION 16500

LIGHTING

PART 1. GENERAL

a. SECTION INCLUDES

- i. Luminaires and lampholders.
- ii. Lamps.

b. REGULATORY REQUIREMENTS

- i. Conform to requirements of ANSI/NFPA 70.
- ii. Furnish products listed by Underwriters Laboratories, Inc. or other testing firm acceptable to authority having jurisdiction.

c. MAINTENANCE

- i. Provide two extra of each size and type of lens and enclosure.
- ii. Provide two extra of each lamp installed.
- iii. Provide two extra each size and type of ballast.

PART 2. PRODUCTS

a. LUMINAIRES AND LAMP HOLDERS

- i. Luminaire Schedule: Product requirements for each luminaire and lampholder are specified on Drawings.
- ii. Accessories: Provide required accessories for mounting and operation of each luminaire as indicated.
 - (1) Recessed Luminaires: Provide trim type suitable for ceiling system in which luminaire is installed.
 - (2) Thermal Protection: Provide thermal protection devices to meet NFPA 70 requirements.
 - (3) Surface Luminaires: Provide spacers and brackets required for mounting.
 - (4) Pendant Luminaires: Provide swivel hangers, pendant rods, tubes, and chains as indicated to install luminaire at appropriate height.

b. LAMPS

- i. Description:
 - (1) Incandescent Lamps: 130 volts.
 - (2) Fluorescent Lamps: Cool white

- c. **FLUORESCENT BALLASTS**
 - i. Provide fluorescent ballast suitable for use under installation conditions for each luminaire and lampholder.
 - (1) Voltage: 120 volts.
 - (2) Ballasts for nominal 430 mA lamps: Electronic, Low Energy type.

PART 3. EXECUTION

a. EXAMINATION AND PREPARATION

- i. Examine adjacent surfaces to determine that surfaces are ready to receive work.

b. INSTALLATION

- i. Install luminaires and accessories in accordance with manufacturers instructions.
 - (1) Provide pendant accessory to mount suspended luminaires and exit signs at height indicated.
 - (2) Support surface-mounted luminaires from ceiling grid tee structure; provide auxiliary support laid across top of ceiling tees. Fasten to prohibit movement.
 - (3) Install recessed luminaires to permit removal from below. Install grid clips.
 - (4) Install lamps in luminaires and lampholders.

c. ADJUSTING AND CLEANING

- i. Align luminaires and clean lenses and diffusers at completion of work.
- ii. Aim adjustable luminaires and lampholders as indicated or as directed.
- iii. Adjust directional arrows on exit signs to meet approval of authority having jurisdiction.
- iv. Clean paint splatters, dirt and debris from installed luminaires.
- v. Touch up luminaire finish at completion of work.
- vi. Relamp luminaires which have failed lamps at completion of work.

END OF SECTION

SECTION 01210 - ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements governing the following:
 - 1. Lump-sum allowances.
 - 2. Unit-cost allowances.

1.2 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

1.3 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.4 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.5 LUMP-SUM AND UNIT-COST ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner under allowance and shall include taxes, freight, and delivery to Project site.
- B. Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner under allowance shall be included as part of the Contract Sum and not part of the allowance.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Allow the sum of \$350.00/m (including delivery and applicable sales tax for the purchase of face brick to match the existing building. Installation costs are to be included under Base Bid.
- B. Allowance No.2: Allow the total lump sum of \$900.00 (including delivery and applicable sales tax) for the purchase of door hardware. Installation costs are to be included under Base Bid.

END OF SECTION 01210

SECTION 03301 - 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, 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 or F.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregate: ASTM C 33, graded, 1-1/2-inch nominal maximum aggregate size.
- C. Water: ASTM C 94/C 94M; potable.

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.
- 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.

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

2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. 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 shall be as indicated on the Drawings. Where not specifically indicated, use 3000 psi.

2. 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.

2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116, and furnish batch ticket information.
 1. When air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

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 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 one-third of concrete thickness.

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 FINISHING FORMED SURFACES

- A. 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.
 - 1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.
- B. Rubbed Finish: Apply the following rubbed finish, defined in ACI 301, to smooth-formed finished as-cast concrete where indicated:
 - 1. Smooth-rubbed finish.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent 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 brooming 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 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 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, 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 03301

SECTION 04810 - UNIT MASONRY ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
 - 1. Face brick under the Face Brick Allowances.

1.2 QUALITY ASSURANCE

- A. 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.

1.3 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 COLORS, TEXTURES, AND PATTERNS

- A. Exposed Masonry Units: To match existing Town Hall (Statesville Brick, Old Plantation Brown, as distributed by The Exum Co., 803-254-8951).

2.2 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 SW, Type FBX.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3000 psi.
2. Initial Rate of Absorption: Less than 30 g/30 sq. in. 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 when viewed from 10 feet.
5. Size (Actual Dimensions): 3-5/8 inches by 2-1/4 inches high by 7-5/8 inches long.

2.3 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Masonry Cement: ASTM C 91.
 1. Available Products:
 - a. Capital Materials Corporation; Flamingo Color Masonry Cement.
 - b. Essroc, Italcementi Group; Brixment] or Velvet.
 - 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; Lehigh Masonry Cement, Lehigh White Masonry Cement.
 - f. National Cement Company, Inc.; Coosa Masonry Cement.
- D. Aggregate for Mortar: ASTM C 144.
 1. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
- E. Aggregate for Grout: ASTM C 404.
- F. 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. Available 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.
- G. Water: Potable.
- H. Mortar Color: To match existing Town Hall (Custom Match Corp., Color No. CM-126).

2.4 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.
- 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. Veneers Anchored with Seismic Masonry-Veneer Anchors: Single 0.188-inch-diameter, hot-dip galvanized, carbon-steel continuous wire.

2.5 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.

2.6 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."
- B. Solder and Sealants for Sheet Metal Flashings: As specified in Division 7 Section "Sheet Metal Flashing and Trim."
- C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; 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.
- 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 one of the following, unless otherwise indicated:
 - 1. Rectangular Plastic Weep/Vent Tubing: Clear butyrate, 3/8 by 1-1/2 by 3-1/2 inches long.
 - a. Available 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.

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

2.9 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 and BIA Technical Notes 8A, Proportion Specification.
1. For masonry below grade or in contact with earth, use Type S.
 2. For reinforced masonry, use Type N.
 3. 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.

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. 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 1/4 inch in 10 feet, maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/4 inch in 20 feet 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 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.

3.3 MORTAR BEDDING AND JOINTING

- A. 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.
- B. Corners: Provide interlocking masonry unit bond in each wythe and course at corners, unless otherwise indicated.
- C. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:

3.4 MASONRY JOINT REINFORCEMENT

- A. General: Install in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
- 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.

3.5 ANCHORING MASONRY VENEERS

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

2. Embed connector sections and continuous wire in masonry joints. Provide not less than 2 inches 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 o.c. vertically and 16 inches horizontally. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches, around perimeter.

3.6 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.
- 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 into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
 3. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall and adhere flexible flashing to top of metal drip edge.
- C. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
 1. Use specified weep/vent products to form weep holes.
 2. Space weep holes 24 inches 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.

3.7 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.

3.8 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 18 inches 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 04810

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Loose steel lintels.

PART 2 - PRODUCTS

2.1 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces without blemishes.
- B. Ferrous Metals:
 - 1. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.2 MISCELLANEOUS MATERIALS

- A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI #79.
- B. Zinc-Rich Primer: Complying with SSPC-Paint 20 or SSPC-Paint 29 and compatible with topcoat.
 - 1. Available Products:
 - a. Benjamin Moore & Co.; Epoxy Zinc-Rich Primer CM18/19.
 - b. Carboline Company; Carbozinc 621.
 - c. ICI Devoe Coatings; Catha-Coat 313.
 - d. International Coatings Limited; Interzinc 315 Epoxy Zinc-Rich Primer.
 - e. PPG Architectural Finishes, Inc.; Aquapon Zinc-Rich Primer 97-670.
 - f. Sherwin-Williams Company (The); Corothane I GalvaPac Zinc Primer.
 - g. Tnemec Company, Inc.; Tneme-Zinc 90-97.

- C. Galvanizing Repair Paint: SSPC-Paint 20, high-zinc-dust-content paint for regalvanizing welds in steel.
- D. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107.

2.3 FABRICATION

- A. General: Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces.

1. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.
- B. Loose Steel Lintels: Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
 1. Lintels in Exterior Walls: Galvanize.
- C. Loose Bearing and Leveling Plates: Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts.

2.4 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Finish metal fabrications after assembly.
- B. Steel and Iron Finishes:
 1. Hot-dip galvanize items as indicated to comply with ASTM A 123/A 123M or ASTM A 153/A 153M as applicable.
 2. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with requirements indicated below for environmental exposure conditions of installed metal fabrications:
 - a. Exteriors (SSPC Zone 1B): SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - b. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."
 3. Shop Priming: Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting," for shop painting.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, with edges and surfaces level, plumb, and true.
 1. Fit exposed connections accurately together. Weld connections that are not to be left as exposed joints but cannot be shop welded. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication.
 2. Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.
 3. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- B. Set bearing and leveling plates on cleaned surfaces using wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts and pack solidly with nonshrink, nonmetallic grout.
- C. Touch up surfaces and finishes after erection.

1. Painted Surfaces: Clean field welds, bolted connections, and abraded areas and touch up paint with the same material as used for shop painting.
2. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 05500

SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
1. Framing with dimension lumber.
 2. Framing with engineered wood products.
 3. Wood blocking and nailers.
 4. Wood furring and grounds.
 5. Plywood backing panels.

1.2 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product.
1. Include data for wood-preservative and fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.
- B. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee Board of Review.
- C. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
1. Wood-preservative-treated wood.
 2. Engineered wood products.
 3. Power-driven fasteners.
 4. Powder-actuated fasteners.
 5. Expansion anchors.
 6. Metal framing anchors.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
1. Factory mark each piece of lumber with grade stamp of grading agency.
 2. Provide dressed lumber, S4S, unless otherwise indicated.

- B. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
 - 1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWPAC2, except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPAC31 with inorganic boron (SBX).
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 - 2. Wood sills, blocking, furring, and similar concealed members in contact with masonry or concrete.
 - 3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
 - 4. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
 - 5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 DIMENSION LUMBER FRAMING

- A. Maximum Moisture Content: 19 percent.
- B. Non-Load-Bearing Interior Partitions: Construction, Stud, or No. 3 grade of any species.
- C. Framing Other Than Non-Load-Bearing Interior Partitions: Construction or No. 2 grade and any of the following species:
 - 1. Hem-fir (north); NLGA.
 - 2. Southern pine; SPIB.
 - 3. Douglas fir-larch; WCLIB or WWPA.
 - 4. Spruce-pine-fir; NLGA.
 - 5. Douglas fir-south; WWPA.

2.4 ENGINEERED WOOD PRODUCTS

- A. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.
 - 1. Extreme Fiber Stress in Bending, Edgewise: 2900 psi (20.0 MPa) for 12-inch nominal- (286-mm actual-) depth members.
 - 2. Modulus of Elasticity, Edgewise: 2,000,000 psi (13 700 MPa).

2.5 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Furring.
 - 4. Grounds.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 19 percent maximum moisture content of any species.
- C. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine, No. 2 grade; SPIB.
 - 2. Eastern softwoods, No. 2 Common grade; NeLMA.
 - 3. Northern species, No. 2 Common grade; NLGA.
 - 4. Western woods, Construction or No. 2 Common grade; WCLIB or WWPA.

2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Power-Driven Fasteners: NES NER-272.
- C. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M), Property Class 4.6; with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.7 METAL FRAMING ANCHORS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- C. Basis-of-Design Products: Subject to compliance with requirements, provide products indicated on Drawings or comparable products by one of the following:

1. Alpine Engineered Products, Inc.
2. Cleveland Steel Specialty Co.
3. Harlen Metal Products, Inc.
4. KC Metals Products, Inc.
5. Simpson Strong-Tie Co., Inc.
6. Southeastern Metals Manufacturing Co., Inc.
7. USP Structural Connectors.

- D. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- E. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.

2.8 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch (25-mm) nominal thickness, compressible to 1/32 inch (0.8 mm); selected from manufacturer's standard widths to suit width of sill members indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- D. Metal Framing Anchors: Install metal framing to comply with manufacturer's written instructions.
- E. Do not splice structural members between supports, unless otherwise indicated.
- F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
1. NES NER-272 for power-driven fasteners.
 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

END OF SECTION 06100

SECTION 06160 - SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Wall sheathing.
2. Roof sheathing.
3. Building wrap.

1.2 DELIVERY, STORAGE, AND HANDLING

A. Stack plywood and other panels flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PANEL PRODUCTS, GENERAL

A. Oriented Strand Board: DOC PS 2.

2.2 WALL SHEATHING

A. Oriented-Strand-Board Wall Sheathing: Exposure 1, Structural I sheathing.

2.3 ROOF SHEATHING

A. Oriented-Strand-Board Roof Sheathing: Exposure 1, Structural I sheathing.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated.

1. For wall and roof sheathing panels, provide fasteners with corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.

2.5 WEATHER-RESISTANT SHEATHING PAPER

A. Building Wrap: ASTM E 1677, Type I air retarder; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84; UV stabilized; and acceptable to authorities having jurisdiction.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Chemical Company (The); Styrofoam Weathermate Plus Brand Housewrap.
 - b. DuPont (E. I. du Pont de Nemours and Company); Tyvek HomeWrap.
 - c. Reemay, Inc.; Typar HouseWrap.

B. Building-Wrap Tape: Tape recommended by building-wrap manufacturer.

2.6 MISCELLANEOUS MATERIALS

- A. Adhesives for Field Gluing Panels to Framing: Formulation complying with ASTM D 3498 that is approved for use indicated by manufacturers of both adhesives and panels.

EXECUTION

2.7 INSTALLATION, GENERAL

- A. Securely attach to substrate by fastening as indicated, complying with the following:
1. NES NER-272 for power-driven fasteners.

2.8 WOOD STRUCTURAL PANEL INSTALLATION

- A. General: Comply with applicable recommendations in APA Form No. E30S, "Engineered Wood Construction Guide."
- B. Fastening Methods: Fasten panels as indicated below:
1. Wall and Roof Sheathing:
 - a. Nail to wood framing. Apply a continuous bead of glue to framing members at edges of wall sheathing panels.

END OF SECTION 06160

SECTION 06192 - METAL-PLATE-CONNECTED WOOD TRUSSES

1.1 GENERAL

- A. Structural Performance: Engineer, fabricate, and erect metal-plate-connected wood trusses to withstand design loads without exceeding ANSI/TPI-1 deflection limits.
- B. Engineering Responsibility: Engage a fabricator who uses a qualified professional engineer to prepare calculations, Shop Drawings, and other structural data for metal-plate-connected wood trusses.
- C. Submittals: In addition to Product Data, submit Shop Drawings detailing location, pitch, span, camber, configuration, and spacing for each type of truss required; lumber species, sizes, and stress grades; connector plate size, material, finish, design values, and orientation and location; and bearing details.
 - 1. Include truss Shop Drawings and structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- D. Fabricator's Qualifications: Engage a fabricator who participates in a recognized quality-assurance program that involves inspection by SPIB; Timber Products Inspection, Inc.; Truss Plate Institute (TPI); or other independent inspecting and testing agency acceptable to authorities having jurisdiction.
- E. Comply with applicable requirements and recommendations of ANSI/TP1 1, "National Design Standard for Metal-Plate-Connected Wood Truss Construction," and TPI HIB "Commentary and Recommendations for Handling Installing & Bracing Metal Plate Connected Wood Trusses."
- F. Wood Structural Design Standard: Comply with applicable requirements of AFPA's "National Design Specification for Wood Construction" and its "Supplement."
- G. Single-Source Engineering Responsibility: Provide trusses engineered by metal-plate connector manufacturer to support superimposed dead and live loads indicated, with design approved and certified by a qualified professional engineer who is legally authorized to practice in the jurisdiction where Project is located and who is experienced in the design of metal-plate-connected wood trusses.
- H. Handle and store trusses with care and comply with manufacturer's written instructions and TPI recommendations to avoid damage and lateral bending.

1.2 PRODUCTS

- A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- B. Grade and Species: Provide dimension lumber of any species for truss chord and web members, graded visually or mechanically, and capable of supporting required loads without exceeding allowable design values according to AFPA's "National Design Specification for Wood Construction" and its "Supplement."
- C. Metal Connector Plates: Fabricate connector plates from structural-quality steel sheet, zinc coated by hot-dip process complying with ASTM A 653, G60 coating designation; Grade 33 and not less than 0.0359 inch thick.

- D. Fasteners: Provide fasteners of size and type indicated that comply with requirements specified below for material and manufacture. Where truss members are exposed to weather or to high relative humidities, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of stainless steel, Type 304 or 316.
1. Nails, Wire, Brads, and Staples: FS FF-N-105.
 2. Power-Driven Fasteners: CABO NER-272.
 3. Wood Screws: ASME B18.6.1.
 4. Lag Bolts and Screws: ASME B18.2.1.
 5. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- E. Metal Framing Anchors: Provide metal framing anchors with allowable design loads, as published by manufacturer, that meet or exceed those indicated, of the following metal and finish:
1. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653, G60 coating designation; structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated.
- F. Assemble truss members in design configuration indicated using jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances of ANSI/TPI 1. Position members to produce design camber indicated. Fabricate wood trusses within manufacturing tolerances of ANSI/TPI 1.
- G. Connect truss members by metal connector plates located and securely embedded simultaneously into both sides of wood members by air or hydraulic press.

1.3 EXECUTION

- A. Install and brace trusses according to recommendations and tolerances of ANSI/TPI. Space trusses as indicated; install plumb, square, and true to line; and securely fasten to supporting construction.
- B. Anchor trusses securely at all bearing points using metal framing anchors and fasten according to metal framing anchor manufacturer's fastening schedules and written instructions.
- C. Securely connect each truss ply required for forming built-up girder trusses. Anchor trusses to girder trusses as indicated.
- D. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
- E. Do not alter, cut, or remove truss members.
- F. Return wood trusses that are damaged or do not meet requirements to fabricator and replace with trusses that do meet requirements.

END OF SECTION 06192

SECTION 06401 - EXTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Exterior ornamental work.

PART 2 - PRODUCTS

- 2.1 Available Manufacturers: Subject to compliance with requirements, provide exterior architectural woodwork by one of the following:
 - A. Hartman-Sanders
 - B. Melton Classics
 - C. Tumcraft
- 2.2 Fiberglass Reinforced Columns: Tuscan design plain round columns, with base/plinth and cap to match existing building.
 - A. Screws: Hot-dip galvanized or stainless steel.

PART 3 - EXECUTION

- 3.1 Installation: Install fiberglass reinforced columns in strict accordance with manufacturers written instructions.
 - A. Clean columns on exposed and semiexposed surfaces.

END OF SECTION 06401

SECTION 07210 - BUILDING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Concealed building insulation.

1.2 QUALITY ASSURANCE

- A. Retain ASTM test method below based on product and kind of fire-resistance characteristic specified for each product in Part 2. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84 for surface-burning characteristics and other methods indicated with product], by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

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. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 GLASS-FIBER BLANKET INSULATION

- A. Manufacturers:
 - 1. CertainTeed Corporation.
 - 2. Guardian Fiberglass, Inc.
 - 3. Johns Manville.
 - 4. Knauf Fiber Glass.
 - 5. Owens Corning.
- B. Faced, Glass-Fiber Blanket Insulation: ASTM C 665, Type II (blankets with nonreflective membrane facing), Class C (membrane-faced surface not rated for flame propagation for use in nonexposed applications only) Category 1 (membrane is a vapor barrier), kraft faced.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.
- C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.
- E. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.2 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Seal joints between foam-plastic insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.
- C. Set vapor-retarder-faced units with vapor retarder to interior side of construction, unless otherwise indicated.
 - 1. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.
- D. Install glass-fiber insulation in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. Maintain 3-inch clearance of insulation around recessed lighting fixtures.
 - 4. For wood-framed construction, install mineral-fiber blankets according to ASTM C 1320 and as follows:
 - a. With faced blankets having stapling flanges, secure insulation by inset, stapling flanges to sides of framing members.
 - b. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.

- E. Stuff glass-fiber loose-fill insulation into miscellaneous voids and cavity spaces where shown. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.

END OF SECTION 07210

SECTION 07311 - ASPHALT SHINGLES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Asphalt shingles.
 - 2. Felt underlayment.
 - 3. Ridge vents.

1.2 QUALITY ASSURANCE

- A. Source Limitations: Obtain shingles, ridge, hip cap shingles, ridge vents, and felt underlayment through one source from a single asphalt shingle manufacturer.
- B. Fire-Test-Response Characteristics: Provide asphalt shingle and related roofing materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
 - 1. Exterior Fire-Test Exposure: Class C; ASTM E 108 or UL 790, for application and roof slopes indicated.

1.3 WARRANTY

- A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace asphalt shingles that fail in materials within specified warranty period.
 - 1. Material Warranty Period: 30 years from date of Substantial Completion, prorated, with first 5 years nonprorated.
 - 2. Algae-Discoloration Warranty Period: Asphalt shingles will not discolor 5 years from date of Substantial Completion.

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. Products: Subject to compliance with requirements, provide one of the products specified.

2.2 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Asphalt Shingles: Match existing color, texture, and pattern indicated by referencing manufacturer's standard designations for these characteristics. Existing shingles are Certainteed, Landmark AR Series, Weathered Wood.
 - 1. Physical Requirements: Meet the physical requirements of ASTM D 3462.
 - 2. Wind Resistance: Passes the test requirements of ASTM D 3161.
 - 3. Fire-Test-Response Classification: Class C. **name and color.**>

- B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

2.3 UNDERLAYMENT MATERIALS

- A. Glass-Felt Underlayment: ASTM D 2178, Type IV.

2.4 RIDGE VENTS

- A. Rigid Ridge Vent: Manufacturer's standard rigid section high-density polypropylene or other UV-stabilized plastic ridge vent for use under ridge shingles.

2.5 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.

- B. Roofing Nails: ASTM F 1667; aluminum, stainless-steel, copper, or hot-dip galvanized steel wire shingle nails, minimum 0.120-inch-diameter, sharp-pointed, with a minimum 3/8-inch-diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through OSB or plywood sheathing.
 - 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

- C. Felt Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized steel wire with low profile capped heads or disc caps, 1-inch minimum diameter.

2.6 METAL FLASHING AND TRIM

- A. Sheet Metal Flashing and Trim: Comply with requirements in Division 7 Section "Sheet Metal Flashing and Trim."
 - 1. Sheet Metal: Zinc-coated (galvanized) steel.

- B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

- A. Single-Layer Felt Underlayment: Install single layer of felt underlayment on roof deck perpendicular to roof slope in parallel courses. Lap sides a minimum of 2 inches over underlying course. Lap ends a minimum of 4 inches. Stagger end laps between succeeding courses at least 72 inches. Fasten with roofing nails.

3.2 METAL FLASHING INSTALLATION

- A. General: Install metal flashings and other sheet metal to comply with requirements in Division 7 Section "Sheet Metal Flashing and Trim."
 - 1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

3.3 ASPHALT SHINGLE INSTALLATION

- A. Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip at least 7 inches wide with self-sealing strip face up at roof edge.
- C. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.
- D. Fasten asphalt shingle strips with a minimum of four roofing nails located according to manufacturer's written instructions.
- E. Ridge Vents: Install continuous ridge vents over asphalt shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.
- F. Ridge and Hip Cap Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.

END OF SECTION 07311

SECTION 07620 - SHEET METAL FLASHING AND TRIM

- 1.1 Submittals: Product Data, Shop Drawings, and Samples for each item specified.
- 1.2 PRODUCTS
- A. General: Provide sheet metal flashing and trim materials that comply with requirements and with referenced standards.
- B. Aluminum Sheet: ASTM B 209, 3003-H14, mill finish, minimum thickness of 0.040 inch, unless otherwise indicated.
- C. Galvanized Steel Sheet: ASTM A 526, G 90, commercial quality, or ASTM A 527, G 90, lock-forming quality, hot-dip galvanized, mill phosphatized where indicated for painting; not less than 0.0396 inch thick, unless otherwise indicated.
- D. Miscellaneous Materials and Accessories: As follows:
1. Solder: ASTM B 32, Grade Sn50.
 2. Fasteners: Noncorrosive metal. Match finish of exposed heads with material being fastened.
 3. Asphalt Mastic: SSPC-Paint 12, asbestos free, solvent type.
 4. Roofing Cement: ASTM D 4586, Type I, asbestos free, asphalt based.
 5. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
 6. Epoxy Seam Sealer: 2-part, non-corrosive, aluminum seam-cementing compound.
 7. Adhesives: Type recommended for waterproof and weather-resistant seaming and adhesive.
 8. Clips, Straps, Anchoring Devices, and Similar Accessories: Compatible with material being installed.
- E. Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of the item indicated.
1. Gutters: 0.040-inch- thick aluminum.
 2. Downspouts: 0.040-inch- thick aluminum.
 3. Exposed Trim, Gravel Stops, and Fascia Soffit: 0.0187-inch- thick aluminum.
 4. Copings: 0.050-inch- thick aluminum.
 5. Base Flashing: 0.0187-inch- thick aluminum.
 6. Counterflashing: 0.0187-inch- thick aluminum.
 7. Drip Edges: 0.0217-inch- thick galvanized steel.
 8. Eave Flashing: 0.0217-inch- thick galvanized steel.
 9. Roof-Penetration Flashing: 0.0276-inch- thick galvanized steel.
- F. Coil-Coated Aluminum Finish: 2-coat fluoropolymer Hylar 5000 or Kynar 500.
1. Color and Gloss: Match Architect's sample.
- G. Coil-Coated Galvanized Steel Sheet Finish: 2-coat fluoropolymer Hylar 5000 or Kynar 500.
1. Color and Gloss: Match Architect's sample.

1.3 EXECUTION

- A. Installation: Comply with manufacturer's instructions and SMACNA's "Architectural Sheet Metal Manual" allow for thermal expansion; set true to line and level as indicated. Install Work with laps, joints, and seams permanently watertight and weatherproof; conceal fasteners where possible.
 - 1. Roof-Edge Flashings: Secure metal flashings at roof edges according to FM Loss Prevention Data Sheet 1-49 for specified wind zone.
- B. Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- C. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Prein edges of sheets to be soldered to a width of 1-1/2 inches, except where pretinned surface would show in finished Work.
 - 1. Do not solder aluminum.
- D. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.
- E. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- F. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- G. Separations: Separate noncompatible metals or corrosive substrates with a coating of asphalt mastic or other permanent separation as recommended by manufacturer.
- H. Counterflashings: Coordinate installation with installation of assemblies to be protected by counterflashing. Install counterflashings in reglets or receivers. Secure in a waterproof manner by means of snap-in installation and sealant, lead wedges and sealant, interlocking folded seam, or blind rivets and sealant. Lap counterflashing joints a minimum of 2 inches and bed with sealant.
- I. Roof-Penetration Flashing: Coordinate installation with roofing and installation of items penetrating roof.

END OF SECTION 07620

SECTION 07920 - JOINT SEALANTS

1.1 GENERAL

- A. Submittals: In addition to Product Data, submit the following:
1. Samples of each type and color of joint sealant required.
 2. Test reports for joint sealants evidencing compliance with requirements.

1.2 PRODUCTS

- A. Elastomeric Sealant Manufacturers: Subject to compliance with requirements, provide sealants by one of the following:
1. Polysulfide Sealants:
 - a. W.R. Meadows, Inc.
 - b. Morton International, Inc.
 - c. Pecora Corporation.
 - d. Polymeric Systems, Inc.
 - e. Sonneborn Building Products Div., ChemRex Inc.
 2. Silicone Sealants:
 - a. Bostik Inc.
 - b. Dow Corning.
 - c. GE Silicones.
 - d. NUCO Industries, Inc.
 - e. Ohio Sealants, Inc.
 - f. Pecora Corporation.
 - g. Polymeric Systems, Inc.
 - h. Sonneborn Building Products Div., ChemRex Inc.
 - i. Tremco.
 3. Urethane Sealants:
 - a. Bostik Inc.
 - b. Mameco International.
 - c. W.R. Meadows, Inc.
 - d. Pacific Polymers, Inc.
 - e. Pecora Corporation.
 - f. Polymeric Systems, Inc.
 - g. Sika Corporation.
 - h. Sonneborn Building Products Div., ChemRex Inc.
 - i. Tremco.
- B. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience.
- C. Colors: Provide colors indicated for exposed joint sealants or, if not indicated, as selected by Architect from manufacturer's full range for this characteristic.

- D. Elastomeric Sealant Standard: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant of base polymer specified below:
1. Multicomponent Nonsag Polysulfide Sealant: Type M, Grade NS, Class 25, and as follows:
 - a. Uses T, NT, M, G, A, and O.
 2. Low-Modulus Neutral-Curing Silicone Sealant: Type S, Grade NS, Class 25, and as follows:
 - a. Uses NT, M, G, A, and O.
 - b. Additional capability, when tested per ASTM C 719, to withstand the following percentage changes in joint width and still comply with other requirements of ASTM C 920:
 - 1) 50 percent movement in both extension and compression for a total of 100 percent movement.
 3. Multicomponent Nonsag Urethane Sealant: Type M, Grade NS, Class 25, and as follows:
 - a. Uses NT, M, G, A, and O.
- E. Acrylic-Based Solvent-Release Sealant: ASTM C 1311.
- F. Butyl-Rubber-Based Solvent-Release Joint Sealant: ASTM C 1085.
- G. Latex Sealant: ASTM C 834.
- H. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant complying with ASTM C 834.
- I. Preformed Foam Sealant: Manufacturer's standard preformed, precompressed, impregnated, open-cell foam sealant manufactured from high-density urethane foam impregnated with a nondrying, water-repellent agent; in precompressed sizes and in roll or stick form to fit joint widths indicated, and as follows:
1. Impregnating Agent: Manufacturer's standard.
 2. Density: Manufacturer's standard.
 3. Backing: Pressure-sensitive adhesive, factory applied to one side with protective wrapping.
- J. Sealant Backings, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- K. Cylindrical Sealant Backings: ASTM C 1330, of type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
1. Type C: Closed-cell material with a surface skin.
- L. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint.
- M. Primer: As recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

1.3 EXECUTION

- A. General: Comply with joint sealant manufacturer's instructions for products and applications indicated.
- B. Sealant Installation Standard: Comply with ASTM C 1193.
- C. Acoustical Sealant Application Standard: Comply with ASTM C 919 for use of joint sealants in acoustical applications.

END OF SECTION 07920

SECTION 08110 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Standard hollow metal doors and frames.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include elevations, door edge details, frame profiles, metal thicknesses, preparations for hardware, and other details.
- C. Schedule: Prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Amweld Building Products, LLC.
 - 2. Benchmark; a division of Therma-Tru Corporation.
 - 3. Ceco Door Products; an Assa Abloy Group company.
 - 4. Curries Company; an Assa Abloy Group company.
 - 5. Deansteel Manufacturing Company, Inc.
 - 6. Firedoor Corporation.
 - 7. Fleming Door Products Ltd.; an Assa Abloy Group company.
 - 8. Habersham Metal Products Company.
 - 9. Kewanee Corporation (The).
 - 10. Mesker Door Inc.
 - 11. Pioneer Industries, Inc.
 - 12. Security Metal Products Corp.
 - 13. Steelcraft; an Ingersoll-Rand company.
 - 14. Windsor Republic Doors.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, CS, Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, CS, Type B.

- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum A40 metallic coating.
- D. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z coating designation; mill phosphatized.
 - 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- F. Mineral-Fiber Insulation: ASTM C 665, Type I.
- G. Glazing: Division 8 Section "Glazing."

2.3 STANDARD HOLLOW METAL DOORS

- A. General: Comply with ANSI/SDI A250.8.
 - 1. Design: Flush panel.
 - 2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core.
 - a. Thermal-Rated (Insulated) Doors for all exterior doors: R-value of not less than 6.0 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.
 - 3. Vertical Edges for Single-Acting Doors: Manufacturer's standard.
 - 4. Top and Bottom Edges: Closed with flush or inverted 0.042-inch-thick, end closures or channels of same material as face sheets.
 - 5. Tolerances: SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
- B. Exterior Doors: Face sheets fabricated from metallic-coated steel sheet. Comply with ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
 - 1. Level 3 and Physical Performance Level A (Extra Heavy Duty), Model 1 (Full Flush).
- C. Hardware Reinforcement: ANSI/SDI A250.6.

2.4 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8.
- B. Exterior Frames: Fabricated from metallic-coated steel sheet.
 - 1. Fabricate frames with mitered or coped corners.
 - 2. Fabricate frames as full profile welded unless otherwise indicated.
 - 3. Frames for Level 3 Steel Doors: 0.053-inch-thick steel sheet.
- C. Hardware Reinforcement: ANSI/SDI A250.6.

2.5 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
- B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:
 - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.6 FABRICATION

- A. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 117.
- B. Hollow Metal Doors:
 - 1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors. Seal joints in top edges of doors against water penetration.
- C. Hollow Metal Frames: Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 - 1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 3. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 - 4. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Two anchors per jamb up to 60 inches high.
 - 2) Three anchors per jamb from 60 to 90 inches high.
 - 3) Four anchors per jamb from 90 to 120 inches high.
 - 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
 - 5. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers.
 - a. Single-Door Frames: Three door silencers.
 - b. Double-Door Frames: Two door silencers.
- D. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware according to the Door Hardware Schedule and templates furnished as specified in Division 8 Section "Door Hardware."
 - 1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
 - 2. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
 - 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.

2.7 STEEL FINISHES

- A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
 - 1. Shop Primer: ANSI/SDI A250.10.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Hollow Metal Frames: Comply with ANSI/SDI A250.11.
 - 1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. Install frames with removable glazing stops located on secure side of opening.
 - b. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - c. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 - 3. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- B. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
 - 1. Non-Fire-Rated Standard Steel Doors:
 - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
 - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

3.2 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- C. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 08110

SECTION 08711 - DOOR HARDWARE

PART 1. GENERAL

- 1.01 Submittals: In addition to Product Data for each item specified, submit the following:
- A. Door Hardware Schedule: Organize into door hardware sets indicating type, style, function, size, label, hand, manufacturer, fasteners, location, and finish of each door hardware item. Include description of each electrified door hardware function, including sequence of operation.
 - B. Keying Schedule: Detail Owner's final keying instructions for locks.
 - C. Product Certificates: Certifying that door hardware complies with listed fire door assemblies.
- 1.02 Deliver keys to manufacturer of key control system.
- 1.03 Templates: Obtain and distribute templates for doors, frames, and other work specified to be factory prepared for installing door hardware.

PART 2. PRODUCTS

- 2.01 Furnish door hardware as selected by Architect and in such quantities as provided for under Division 1, Section 01210 *Allowances* and other general provisions of the Contract.

PART 3. EXECUTION

- 3.01 Examine doors and frames for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- 3.02 Steel Door and Frame Preparation: Comply with DHI A115 series. Drill and tap doors and frames for surface-applied hardware according to SDI 107.
- 3.03 Mounting Heights: Comply with DHI requirements, unless otherwise indicated.
- 3.04 Installation: Comply with manufacturer's written instructions. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- A. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

- 3.05 Adjust and check each operating item of door hardware and each door to ensure proper operation or function. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with accessibility requirements. Clean operating items as necessary to restore proper function and finish.

END OF SECTION 08711

SECTION 09900 - PAINTING

1.1 GENERAL

- A. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces.
1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
1. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- D. Submittals: For each paint system specified, provide the following:
1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
- E. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated. After color selection, the Architect will furnish color chips for surfaces to be coated.
- F. Samples for Verification: Of each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.
1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
 2. Provide a list of materials and applications for each coat of each sample. Label each sample for location and application.
 3. Submit Samples on the following substrates for the Architect's review of color and texture only:
 - a. Painted Wood: Provide two 12-inch-square samples of each color and material on hardboard.
 - b. Ferrous Metal: Provide two 4-inch-square samples of flat metal and two 8-inch-long samples of solid metal for each color and finish.
- G. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

- H. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample of each type of coating and substrate required on the Project. Comply with procedures specified in PDCA P5. Duplicate finish of approved prepared samples.
 - 1. The Architect will select one room or surface to represent surfaces and conditions for each type of coating and substrate to be painted. After permanent lighting and other environmental services have been activated, apply coatings in this room or to each surface as specified.
 - a. After finishes are accepted, the Architect will use the room or surface to evaluate coating systems of a similar nature.
- I. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label.
- J. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain containers in clean condition, free of foreign materials and residue. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.
- K. Project Conditions: Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.2 PRODUCTS

- A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
 - 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers.
- C. Colors: Provide color selections made by the Architect.

1.3 EXECUTION

- A. Examine substrates, areas, and conditions under which painting will be performed for compliance with paint application requirements. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates.
- C. Preparation: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before

surface preparation and painting. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

- D. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- E. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.
 - 1. Cementitious Materials: Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
 - a. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.
 - 2. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 - b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
 - c. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
 - 3. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.
 - a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.
 - 4. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- F. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
 - 1. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 - 2. Use only thinners approved by paint manufacturer and only within recommended limits.

- G. Application: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in the schedules.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 3. Provide finish coats that are compatible with primers used.
 4. The term "exposed surfaces" includes areas visible when permanent or built-in items are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 6. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 7. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 8. Sand lightly between each succeeding enamel or varnish coat.
- H. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 3. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- I. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
- J. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
- K. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.
- L. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.
- M. Field Quality Control: The Owner reserves the right to engage the services of an independent testing agency to sample the paint material being used. Samples of material delivered to the Project will be taken, identified, sealed, and certified in the presence of the Contractor.
1. The testing agency will perform appropriate tests as required by the Owner.

2. If tests show material being used does not comply with specified requirements, the Contractor shall remove noncomplying paint from the site, pay for testing, and repaint surfaces previously coated with the rejected paint. If necessary, the Contractor may be required to remove rejected paint from previously painted surfaces if, on repainting with specified paint, the 2 coatings are incompatible.
- N. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.
- O. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- P. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.
- Q. Paint Schedules: Provide the following paint systems for the various substrates indicated:

1.4 EXTERIOR PAINT SCHEDULE

- A. Wood Trim: Provide the following finish systems over exterior wood trim:
1. Medium-Shade, Semigloss, Acrylic-Enamel Finish: 2 finish coats over a primer.
 - a. Primer: Exterior, acrylic-latex primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.4 mils.
 - 1) Devoe: 1102 All-Weather Exterior Alkyd House Paint Primer.
 - 2) Fuller: 220-08 Exterior Latex Wood Primer.
 - 3) Glidden: UH 790 Ultra-Hide Exterior Latex Prime Coat.
 - 4) Moore: Moorwhite Primer #100.
 - 5) PPG: 72-1 Sun-Proof Exterior House & Trim Wood Primer Flat--Latex.
 - 6) P & L: S/D 1002 Suprime "2" Exterior Latex Wood Primer.
 - 7) S-W: A-100 Latex Wood Primer.
 - b. First and Second Coats: Semigloss, waterborne, exterior, acrylic-latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.4 mils.
 - 1) Devoe: 17XX Wonder-Shield Semi-Gloss Exterior Acrylic Latex House and Trim Paint.
 - 2) Fuller: 664-XX Weather King II Semi-Gloss House & Trim Paint.
 - 3) Glidden: 6600 Series Spred Ultra Exterior Gloss Latex House & Trim Paint.
 - 4) Moore: MoorGlo Latex House & Trim Paint #096.
 - 5) PPG: 78 Line Sun-Proof Semi-Gloss Acrylic Latex House and Trim Paint.
 - 6) P & L: Z/F 3100 Series Aqua Royal Latex House & Trim Finish.
 - 7) S-W: A-100 Exterior Latex Gloss.

- B. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
1. Full-Gloss, Alkyd-Enamel Finish: 2 finish coats over a rust-inhibitive primer.
 - a. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils.
 - 1) Devoe: 13101 Mirrolac Rust Penetrating Metal Primer.
 - 2) Fuller: 621-04 Blox-Rust Alkyd Metal Primer.
 - 3) Glidden: 5205 Glid-Guard Tank & Structural Primer, Red.
 - 4) Moore: IronClad Retardo Rust-Inhibitive Paint #163.
 - 5) PPG: 6-208 Speedhide Interior/Exterior Rust Inhibitive Steel Primer.
 - 6) P & L: S 4551 Tech-Gard High Performance Rust-Inhibitor Primer.
 - 7) S-W: Kem Kromik Metal Primer B50N2/B50W1.
 - b. First and Second Coats: Full-gloss, exterior, alkyd enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 3.0 mils.
 - 1) Devoe: 70XX Mirrolac Interior/Exterior Alkyd-Urethane Gloss Enamel.
 - 2) Fuller: 312-XX Heavy-Duty Industrial Maintenance Enamel.
 - 3) Glidden: 4500 Series Glid-Guard Alkyd Industrial Enamel.
 - 4) Moore: Impervo Enamel #133.
 - 5) PPG: 6-282 Speedhide Interior/Exterior Gloss-Oil Enamel.
 - 6) P & L: S 4500 Series Tech-Gard Maintenance Gloss Enamel.
 - 7) S-W: Industrial Enamel B-54 Series.
- C. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated (galvanized) metal surfaces:
1. Full-Gloss, Acrylic-Enamel Finish: 2 finish coats over a galvanized metal primer.
 - a. Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
 - 1) Devoe: 8502/8520 Mirrolac-WB Interior/Exterior Waterborne Flat DTM Primer and Finish.
 - 2) Fuller: 621-05 Blox-Rust Latex Metal Primer.
 - 3) Glidden: 6950 Lifemaster Pro Direct-to-Metal Acrylic Coating.
 - 4) Moore: IronClad Galvanized Metal Latex Primer #155.
 - 5) PPG: 90-709 Pitt-Tech One Pack Interior/Exterior Primer/Finish DTM Industrial Enamel.
 - 6) P & L: Z/F 1003 Suprime "3" Interior/Exterior Latex Metal Primer.
 - 7) S-W: DTM Acrylic Primer/Finish B66W1.
 - b. First and Second Coats: Full-gloss, waterborne, acrylic enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.4 mils.
 - 1) Devoe: 84XX Mirrolac-WB Interior-Exterior Waterborne High Gloss Enamel.
 - 2) Fuller: 669-XX Weather King II Gloss House & Trim Paint.
 - 3) Glidden: 6950 Lifemaster Pro Direct-to-Metal Acrylic Coating.
 - 4) Moore: Impervex Enamel #309.
 - 5) PPG: 90 Line Pitt-Tech One Pack Interior/Exterior High Performance Waterborne High Gloss DTM Industrial Enamels.

- 6) P & L: Z/F 2900 Series Enducryl Acrylic Maintenance Enamel.
- 7) S-W: DTM Acrylic Coating Gloss (Waterborne) B66W100 Series.

END OF SECTION 09900

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Vendor Qualifications and Information

Request for Proposal No. FY10-226 Construction – Storage Building, Neeses, S. C.

Vendor shall provide with its proposal, the following 1 original and 3 copies which should be collated, fastened together, and clearly labeled “Vendor’s Certification of Qualifications and Information for Request for Proposal No. FY10-226”:

1. Documentation of vendor’s licenses to demonstrate vendor has sufficient licensing for the scope of work. The minimum licensing for a vendor to qualify for this procurement is as follows:
 - a. A state general contractor’s license.
2. Documentation of vendor’s specific comparative experience(s) to demonstrate that vendor has successful experience with a comparative scope of work. The vendor’s specific comparative experience should include a brief description of whatever parallels vendor believes exist between the scope of work for this procurement and vendor’s actual experience. Vendor may, but is not required to, supply up to three (3) client references in connection with its response to this item.
3. Documentation of vendor’s general viability to demonstrate vendor can satisfactorily and timely complete the scope of work, including evidence that vendor has all of the following:
 - a. Adequate capital;
 - b. An acceptable credit rating;
 - c. Efficient office force with satisfactory record timely and sufficient materials delivery and communications skills to act as liaison with mechanical trades;
 - d. Efficient and adequate field force with extensive knowledge of each type of work involved in the scope of work;
 - e. An adequate supply of construction equipment in good operating condition; and
 - f. A record of amicable relations with other parties to its contracts, those persons who occupy properties nearby or adjoining vendor’s construction projects, vendor’s employees, and with subcontractors.
4. Vendor’s current organizational chart and a description of the general history of the vendor.
5. A description of any litigation within the last 10 years to which vendor has been a party.

Evaluation Criteria

RFP No. FY10-0226 Construction – Storage Building

If Orangeburg County on behalf of the Town of Neeses, S. C. decides to go forward with the procurement, the award shall be made to the vendor whose proposal Orangeburg County determines to be the most advantageous to the County taking into consideration the evaluation factors stated in this section. The evaluation shall be based in part on the County's review and/or verification of the Vendor Qualifications Responses. The factors to be considered in evaluating proposals are as follows, and are list in order of relative importance: see footnote 1

1. Comparative experience of vendor in construction similar to that described in the Scope of Work
2. Competitive pricing
3. Qualitative evaluation of vendor based on vendor's response to Vendor Qualifications and Information and by responses County obtains from questioning vendor's submitted references.
4. Comparative experience of proposed key staff
5. Vendor's financial stability
6. Vendor's willingness, in connection with the Scope of Work, to (1) include Orangeburg County residents in its employment and (2) obtain its supplies from within Orangeburg County.

1 The method of selection, Competitive Seal Proposals, does not require a numerical weighting for each factor. See Code §5-304.7

Certified Bid

Invitation to Bid No. FY10-226 Construction – Storage Building

Total Bid Amount \$(_____)

Labor Amount (Not taxable) \$(_____)

Printed Vendor Name: _____

By signature below, the submitting vendor certifies to Orangeburg County that:

1. The Total Bid Amount, above, is inclusive of all costs, including labor, supervision, materials, supplies, transportation, permits, licenses, taxes or any other costs, incidental or otherwise, for complete and proper performance of the scope of work described in Invitation to Bid FY10-226.
2. Vendor understands and agrees that, due to budget constraints, Orangeburg County reserves the right to adjust or amend the work requirements and/or negotiate with the lowest, most responsive, qualified, and responsible bidder in an effort to reach a cost that is fair, reasonable, and acceptable to both parties.
3. The foregoing bid: contains bid prices that are firm for a minimum of 90 days from the date of opening; is made without prior understanding, agreement, or connection with any other submitting vendor; and is in all respects fair and without collusion or fraud.

Printed Vendor Name

Signature of Vendor's Authorized Agent

Date of Signature

Printed Name of Vendor's Authorized Agent

Title with Vendor of Vendor's Authorized Agent

Addendum Acknowledgement

Request for Proposal FY10-226 Construction – Storage Building

Vendor acknowledges receipt of the follow Addendum to the above-described procurement, agrees that same is/are hereby incorporated and made a part of the above-described procurement as if the Addendum had been included in the original procurement documents:

<u>Addendum No.</u>	<u>Addendum Date</u>	<u>Initials of Vendor's Authorized Agent</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Printed Vendor Name

Signature of Vendor's Authorized Agent

Printed Name of Vendor's Authorized Agent

Title with Vendor of Vendor's Authorized Agent

Certification of No Exceptions

Request for Proposal FY10-226 Construction – Storage Building

The Code requires vendors to give written notice with a submission if vendor will not accept a term of the Invitation to Bid and the incorporated Code as a contract term. See Code §4-302. In connection with that requirement, a vendor must complete this certification and include it in its submission.

Vendor certifies the following regarding its bid:

1. Vendor AGREES to all of the terms of the Invitation to Bid (including the incorporated Code terms) and takes NO EXCEPTIONS: Yes No

2. Vendor does NOT AGREE to all of the terms of the Invitation to Bid (including the incorporated Code terms), and a COMPLETE LIST OF VENDOR'S EXCEPTIONS to same are listed and described below:

Yes No

Identification Of Excepted Term	Description of vendor's substituted term	Vendor's Initials
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Exception 1:

Exception 2:

Exception 3:

Exception 4:

The undersigned vendor hereby certifies that the above-listed exceptions comprise the only exceptions vendor has to the Invitation to Bid (including the incorporated Code terms). The undersigned vendor understands and agrees that if it is the successful vendor, its attempt to claim any exceptions other than those listed above, shall result in the County having the right to claim the bid security bond, retract the intent to award or award, award to another vendor, and suspend and/or debar the vendor.

Printed Vendor Name

Signature of Vendor's Authorized Agent

Printed Name of Vendor's Authorized Agent

Title with Vendor of Vendor's Authorized Agent

Certification of Preference(s)

Invitation to Bid No. FY10-226 Construction – Storage Building

The Code authorizes specific preferences. See Article 3. If a vendor is qualified for one or more preferences and desires to exercise the preference(s), then the vendor must complete and submit this form with its proposal. If a vendor is either (1) not qualified for any preference OR (2) is qualified, but does not desire to exercise any preference, then the vendor does not need to complete or submit this form with its proposal.

Vendor is qualified for and desires to exercise the following preference(s) as vendor has marked, below:

Preference 1. Vendor is a resident of the State of South Carolina:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Preference 2. Vendor is a resident of Orangeburg County, SC:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Preference 3. Vendor is an MBE:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

The undersigned vendor hereby certifies that vendor is qualified for the preference(s) above to which the vendor has indicated "Yes". In addition, the undersigned vendor understands and agrees that if it is not qualified for a preference, but claims to be qualified for a preference on this form, the County shall have the right to suspend and/or debar the vendor in accordance with the Code.

Printed Vendor Name

Signature of Vendor's Authorized Agent

Printed Name of Vendor's Authorized Agent

Title with Vendor of Vendor's Authorized Agent