



University of South Carolina Upstate

**UPSTATE – HODGE ATHLETIC STORAGE
RENOVATIONS**

**USC UPSTATE
365 Hodge Drive
Spartanburg, SC 29303**

STATE PROJECT NO: FP00000228

JCS PROJECT NO: 18106

FEBRUARY 20, 2019



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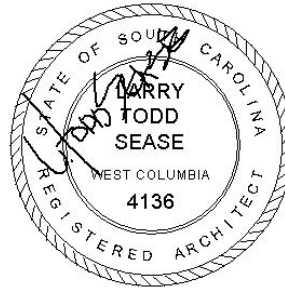
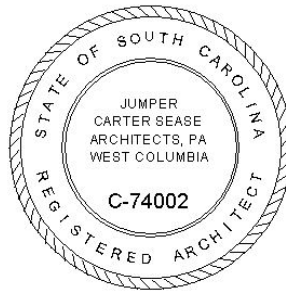
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1.0 GENERAL

- 1.1 Drawings Accompanying Specifications: The following Drawings bearing Architect's Commission No. **18106** dated **FEBRUARY 20, 2019**, and entitled **UPSTATE - HODGE ATHLETIC STORAGE RENOVATIONS** accompanies this specification and is a part thereof:

DRAWING NUMBER	TITLE
T101	Title, Index, and Abbreviations
A301	Floor Plans, Schedules, and Details

END OF SECTION

SE-311

INVITATION FOR MINOR CONSTRUCTION QUOTES

PROJECT NAME: Upstate-Hodge Athletic Storage RenovationsPROJECT NUMBER: FP00000228PROJECT LOCATION: 365 Hodge Drive; Spartanburg, SC 29303BID SECURITY REQUIRED? Yes ☐ No ☒PERFORMANCE BOND REQUIRED? Yes ☐ No ☒PAYMENT BOND REQUIRED? Yes ☐ No ☒CONSTRUCTION COST RANGE: \$ 26,000-\$31,000

DESCRIPTION OF PROJECT: The project consists of the construction of a storage room within existing office and electrical room space located in the Hodge Athletic Building. The construction is primarily metal stud framing and gypsum board and shaftwall, with hollow metal doors, floor finishes, and paint. Selective demolition of miscellaneous items will be required, including cutting openings into existing masonry walls requiring steel beam lintels. Substantial Completion is 60 days. Small and Minority Business participation is strongly encouraged.

BIDDING DOCUMENTS/PLANS MAY BE OBTAINED FROM: purchasing.sc.edu "Facilities Procurement"PLAN DEPOSIT AMOUNT: \$ \$0.00 IS DEPOSIT REFUNDABLE Yes ☐ No ☐ N/A ☒

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

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

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

A/E NAME: Jumper Carter Sease ArchitectsA/E CONTACT: Mr. Darryn BouknightA/E ADDRESS: Street/PO Box: 412 Meeting StreetCity: West Columbia State: SC ZIP: 29169-EMAIL: dbouknight@jcsarchitects.comTELEPHONE: 803.791.1020

FAX: _____

AGENCY: University of South CarolinaAGENCY PROJECT COORDINATOR: Aimee B. RishADDRESS: Street/PO Box: 1300 Pickens StreetCity: Columbia State: SC ZIP: 29208-EMAIL: arish@fmc.sc.eduTELEPHONE: 803.777.2261

FAX: _____

PRE-QUOTE CONFERENCE: Yes ☒ No ☐MANDATORY ATTENDANCE: Yes ☐ No ☒PRE-QUOTE DATE: 3/5/2019 TIME: 10:00AMPLACE: 155 American Way Conf Rm 110 Spartanburg SCQUOTE CLOSING DATE: 3/19/2019 TIME: 2:00PMPLACE: 1300 Pickens Street Conf Rm 100C Columbia SC

QUOTE DELIVERY ADDRESSES:

HAND-DELIVERY:

Attn: Aimee Rish "Bid Enclosed FP00000228"1300 Pickens StreetColumbia, SC 29208

MAIL SERVICE:

Attn: Aimee Rish "Bid Enclosed FP00000228"1300 Pickens StreetColumbia, SC 29208

APPROVED BY: _____

(Agency Project Coordinator)

DATE: _____

Instructions to Bidders

1. Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement or Invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders, the bid form, and other sample bidding and contract forms. The Drawings, Specifications and all Addenda issued prior to execution of the Purchase Order.
2. Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.
3. A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.
4. The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids.
5. An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.
6. A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.
7. The Bidder by making a Bid represents that the Bidder has read and understands the Bidding Documents, to the extent that such documentation relates to the Work for which the Bid is submitted, and for other portions of the Project, if any, being bid concurrently or presently under construction.
8. The Bid is made in compliance with the Bidding Documents.
9. The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents.
10. The Bid is based upon the materials, equipment and systems required by the Bidding Documents without exception.
11. Bidders shall use complete sets of Bidding Documents in preparing Bids; neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
12. Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the Architect at least seven days prior to the date for receipt of Bids.
13. Interpretations, corrections and changes of the Bidding Documents will be made by Addendum. Interpretations, corrections and changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon them.

14. The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

15. No substitution will be considered prior to receipt of Bids unless written request for approval has been received by the Architect at least ten days prior to the date for receipt of Bids. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work, including changes in the work of other contracts that incorporation of the proposed substitution would require, shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

16. If the Architect approves a proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

17. No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

18. Addenda will be issued no later than five days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

19. Each Bidder shall ascertain prior to submitting a Bid that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

20. Bids shall be submitted on the forms included with the Bidding Documents.

21. All blanks on the bid form shall be legibly executed in a non-erasable medium.

22. Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.

23. Interlineations, alterations and erasures must be initialed by the signer of the Bid.

24. All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change."

25. All copies of the Bid, the bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

26. Bids shall be deposited at the designated location prior to the time and date for receipt of Bids. Bids received after the time and date for receipt of Bids will be returned unopened.

27. The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

28. The Owner shall have the right to reject any or all Bids. A Bid not accompanied by a required bid security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

29. It is the intent of the Owner to award a Contract to the lowest qualified Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's own best interests.

30. The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

SE-331

QUOTE FORM

Quotes shall be submitted only on SE-331.

QUOTE SUBMITTED BY: _____
(Offeror's Name)

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

FOR: PROJECT NAME: Upstate-Hodge Athletic Storage Renovations
PROJECT NUMBER: FP00000228

OFFER

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

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

(Bidder check one)

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

ADDENDA: ☐ #1 ☐ #2 ☐ #3 ☐ #4 ☐ #5

- OFFEROR** agrees that this Quote, including all bid alternates, if any, may not be revoked or withdrawn after the opening of quotes, and shall remain open for acceptance for a period of 60 Days following the Quote Date, or for such longer period of time that **OFFEROR** may agree to in writing upon request of the Owner.
- OFFEROR** agrees that from the compensation to be paid, the Owner shall retain as Liquidated Damages the amount of \$ 200.00 for each calendar day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted Contract Time for Substantial Completion, as provided in the Contract Documents.
- OFFEROR** herewith submits its offer to provide all labor, materials, equipment, tools of trades and labor, accessories, appliances, warranties and guarantees, and to pay all royalties, fee, permits, licenses and applicable taxes necessary to complete the following items of construction work:

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

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

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

SC Contractor's License Number: _____

Classification(s) & Limits: _____

Address: _____

Telephone: _____

E-mail: _____

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

BY: _____
(Signature of Offeror's Representative)

(Print or Type Name of Offeror's Representative)

TITLE: _____

USC SUPPLEMENTAL GENERAL CONDITIONS FOR CONSTRUCTION PROJECTS

WORK AREAS

1. The Contractor shall maintain the job site in a safe manner at all times. This includes (but is not limited to) the provision and/or maintenance of lighting, fencing, barricades around obstructions, and safety and directional signage.
2. Contractor's employees shall take all reasonable means not to interrupt the flow of student traffic in building corridors, lobbies, stairs and exterior walks. All necessary and reasonable safety precautions shall be taken to prevent injury to building occupants while transporting materials and equipment through the work area. Providing safe, accessible, plywood-shielded pedestrian ways around construction may be required if a suitable alternative route is not available.
3. At the beginning of the project, the USC Project Manager will establish the Contractor's lay-down area. This area will also be used for the Contractor's work vehicles. The lay-down area will be clearly identified to the contractor by the Project Manager, with a sketch or drawing provided to USC Parking Services. In turn, Parking Services will mark off this area with a sign containing the project name, Project Manager's name, Contractor name and contact number, and end date. Where this area is subject to foot traffic, protective barriers will be provided as specified by the Project Manager. The area will be maintained in a neat and orderly fashion.
4. Work vehicles parked in the lay down area (or designated parking areas) will be clearly marked and display a USC-furnished placard for identification. No personal vehicles will be allowed in this area, or in any areas surrounding the construction site. Personal vehicles must be parked in the perimeter parking lots or garages. Temporary parking permits can be obtained at the Contractor's expense at the USC Parking Office located in the Pendleton Street parking garage. Refer to the CAMPUS VEHICLE EXPECTATIONS (below) for additional information.
5. Contractor is responsible for removal of all debris from the site, and is required to provide the necessary dumpsters which will be emptied on a regular basis. Construction waste must not be placed in University dumpsters. The construction site must be thoroughly cleaned with all trash picked up and properly disposed of on a daily basis and the site must be left in a safe and sanitary condition each day. The University will inspect job sites regularly and will fine any contractor found to be in violation of this requirement an amount of up to \$1,000 per violation.
6. The Contractor shall be responsible for erosion and sediment control measures where ground disturbances are made.

PROJECT FENCING

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

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

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

BEHAVIOR

11. Fraternalization between Contractor's employees and USC students, faculty or staff is strictly prohibited.
12. USC will not tolerate rude, abusive or degrading behavior on the job site. Heckling and cat-calling directed toward students, faculty or staff or any other person on USC property is strictly prohibited. Any contractor whose employees violate this requirement will be assessed a fine of up to \$500 per violation.
13. Contractor's employees must adhere to the University's policy of maintaining a drug-free and tobacco-free campus.

HAZARDOUS MATERIALS & SAFETY COMPLIANCE

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

LANDSCAPE & TREE PROTECTION

18. In conjunction with the construction documents, the USC Arborist shall direct methods to minimize damage to campus trees. Tree protection fencing is required to protect existing trees and other landscape features to be affected by a construction project. The location of this fence will be evaluated for each situation with the USC Arborist, Landscape Architect and Project Manager. Tree protection fencing may be required along access routes as well as within the project area itself. Fence locations may have to be reset throughout the course of the project.
19. The tree protection fence shall be 6' high chain link fence with 80-90% privacy screening unless otherwise approved by USC Arborist and/or Landscape Architect. If the tree protection fence is completely within a screened jobsite fence perimeter, privacy fabric is not required. In-ground fence posts are preferred in most situations for greater protection. If utility or pavement conflicts are present, fence panels in footed stands are acceptable. See attached detail for typical tree protection fencing.
20. No entry, vehicle parking, or materials storage will be allowed inside the tree protection zone. A 4"

layer of mulch shall be placed over the tree protection area to maintain moisture in the root zone.

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

TEMPORARY FACILITIES

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

CAMPUS KEYS

27. Contractor must sign a Contractor Key Receipt/Return form before any keys are issued. Keys must be returned immediately upon the completion of the work. The Contractor will bear the cost of any re-keying necessary due to the loss of or failure to return keys.

WELDING

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

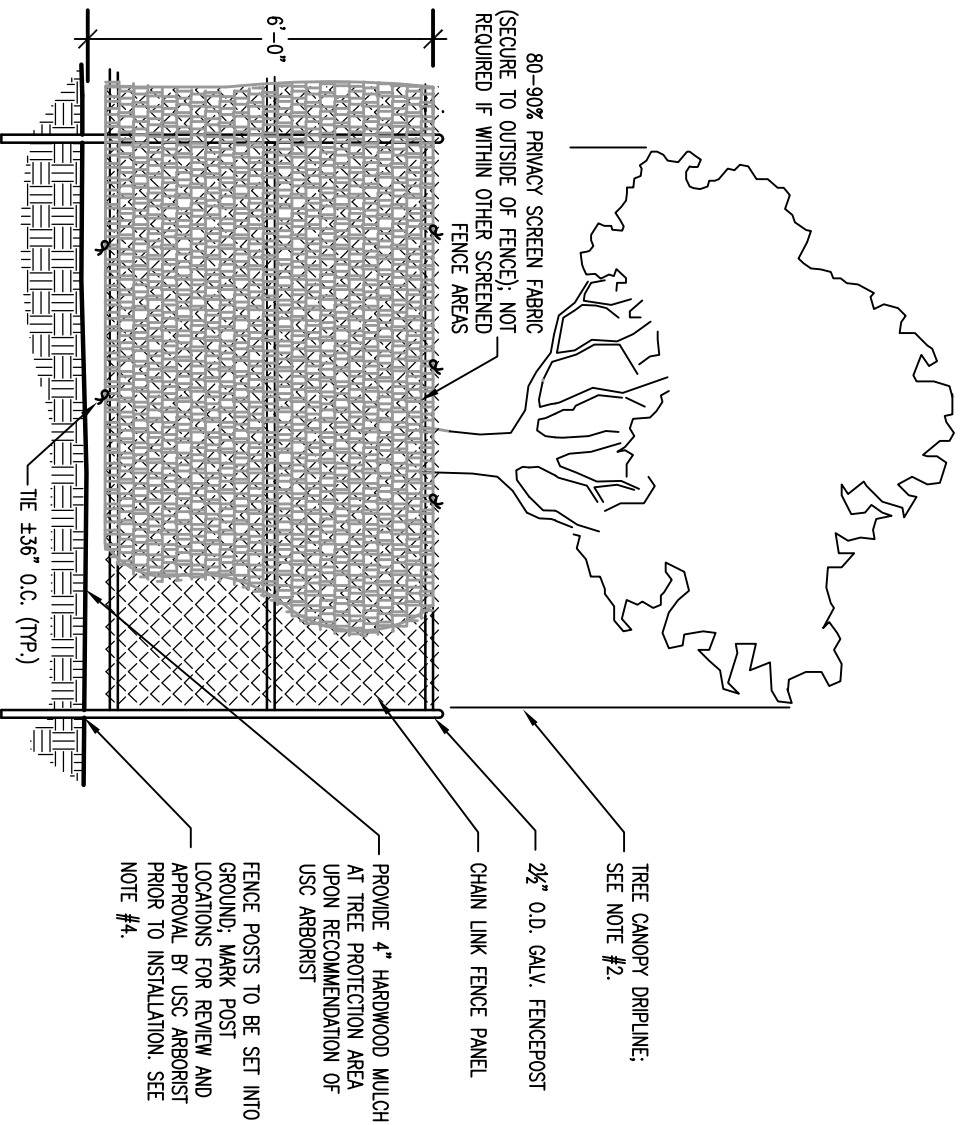
PROJECT EVALUATION & CLOSE-OUT

29. For all projects over \$100,000, including IDCs, a Contractor Performance Evaluation (SE 397) will be reviewed with the GC at the beginning of the project and a copy given to the GC. At the end of the project the form will be completed by the USC Project Manager and a Construction Performance rating will be established.
30. Contractor must provide all O&M manuals, as-built drawings, and training of USC personnel on new equipment, controls, etc. prior to Substantial Completion. Final payment will not be made until

this is completed.

CAMPUS VEHICLE EXPECTATIONS

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



TREE PROTECTION FENCING (IN-GROUND) WITH SCREENING

NOTES:

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

Project Name: Upstate-Hodge Athletic Storage Renovations
Project Number: FP00000228

University of South Carolina

CONTRACTOR'S ONE YEAR GUARANTEE

STATE OF _____

COUNTY OF _____

WE _____
as Contractor on the above-named project, do hereby guarantee that all work executed under the requirements of the Contract Documents shall be free from defects due to faulty materials and /or workmanship for a period of one (1) year from date of acceptance of the work by the Owner and/or Architect/Engineer; and hereby agree to remedy defects due to faulty materials and/or workmanship, and pay for any damage resulting wherefrom, at no cost to the Owner, provided; however, that the following are excluded from this guarantee;

Defects or failures resulting from abuse by Owner.

Damage caused by fire, tornado, hail, hurricane, acts of God, wars, riots, or civil commotion.

[Name of Contracting Firm]

*By _____

Title _____

*Must be executed by an office of the Contracting Firm.

SWORN TO before me this
_____ day of _____, 2____ (seal)

_____ State

My commission expires _____

1.0 GENERAL

The provisions of the Instruction to Bidders and of the Special Conditions, General Conditions, and Supplementary Conditions of these Specifications shall govern the work under this Division or Section the same as if incorporated herein.

1.1 QUALITY ASSURANCE

Qualifications of Manufacturers: Products used in the Work shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Architect/Engineer.

Qualifications of Workmen: Use adequate numbers of workmen who are thoroughly trained and experienced in the necessary skills, completely familiar with the manufacturer's recommended methods of application and completely familiar with the specific requirements of the work.

Codes and Standards: Comply with the 2015 Edition of the International Building Code or other Governing Local Codes and Standard. Comply also with all instructions and recommendations from the manufacturers of various materials. Notify Architect immediately of any systems which do not comply with the 2015 International Building Code or any local codes that may be more stringent.

1.2 PRODUCT HANDLING

Delivery and Storage:

Deliver all packaged materials to the job site in their original unopened containers with all labels intact and legible at time of inspection.

Store all materials in an approved manner.

Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect/Engineer and at no additional cost to the Owner.

1.3 SCHEDULING AND COORDINATION

All work shall be scheduled and coordinated with the Owner.

1.4 MATERIAL AND WORKMANSHIP

Fitting Job Conditions: The Contractor and material suppliers shall be responsible for inspecting all job conditions affecting the installation of an item and taking all field measurements required prior to fabrication of an item to insure that the item concerned will integrate properly with all adjacent materials and fit all other conditions as they exist or will exist in the finished project.

1.5 CODES AND LAWS

All construction will comply with the latest edition of the 2015 International Building Code, National Fire Protection Association Code, Section 504 of the Rehabilitation Act of 1973 and all general and permanent Laws of the State of South Carolina. This District places major emphasis on the safety and well-being of its students, faculty and staff. It is the first duty of supervisors and all other persons in authority to provide for safety and fire prevention.

1.6 OCCUPATIONAL SAFETY AND HEALTH

The construction shall be governed, at all times, by applicable provisions of the Federal Law(s), including but not limited to the following, as amended to date.

Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91-596.

Part 1910 - Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations; and

Part 1518 - Safety and Health Regulations for Construction, Chapter XIII of Title 29, Code of Federal Regulations.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
1. Work covered by the Contract Documents.
 2. Use of premises.
 3. Owner's occupancy requirements.
 4. Specification formats and conventions.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: **Upstate – Hodge Athletic Storage Renovations**
- B. Project Location: **USC Upstate, 365 Hodge Drive, Spartanburg SC 29303**
- C. Owner: **USC Upstate**
1. Owner's Representative: **Mr. Fred Scott, Project Manager**
- D. The Work consists of limited renovations to the Hodge Athletic Building per the contract documents.
- E. The project will be constructed by the successful responsive responsible General Contractor through a public bid process.

1.3 WORK UNDER OTHER CONTRACTS

- A. Concurrent Work: Owner may elect to award separate contract(s) for other construction operations at Project site. Those operations may be conducted simultaneously with work under this Contract.

1.4 USE OF PREMISES

- A. Use of Site: Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Owner Occupancy: Allow for Owner and Owner Contractors occupancy of Project site as required to complete scopes of work.
 2. Driveways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.6 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 33-division format and CSI/CSC's "MasterFormat" 2011 Version numbering system.
 - 1. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 1000

1.0 GENERAL

- 1.1 RELATED DOCUMENTS: Drawings and general provisions of Contract including General & Supplementary Conditions and other Division-1 specification sections, apply to work of this section.
- 1.2 SCOPE: This section describes the allowances that are to be included in the contractor's bid and entered on the Form of Proposal
- 1.3 ALLOWANCE: The following allowances to be used as directed by Architect. Any unused portion of these allowances shall be credited to the Owner at the completion of the work. These allowances shall be considered actual costs and the contractor's profit, insurance, taxes, installation cost, and protection of installed products, will be figured in the bids, except as otherwise noted.
- 1.4 **FINISH HARDWARE:**
\$4,000.00 Including SC Sales Tax and Installation.

NOTE: Allowance money shall be used as directed by the Owner/Architect for the work listed and/or other work as deemed necessary for a successful project by the Owner.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Section:
 - 1. Division 01 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1.3 SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use facsimile of form provided in the Project Manual.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided

- within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Addendum, Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:
- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Requested substitution will not adversely affect Contractor's construction schedule.
 - c. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - d. Requested substitution is compatible with other portions of the Work.
 - e. Requested substitution has been coordinated with other portions of the Work.
 - f. Requested substitution provides specified warranty.
 - g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

- B. Substitutions for Convenience: Not allowed, unless otherwise indicated or approved prior to the bid opening.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 25 00

FOLLOWING IS A SAMPLE FORMAT FOR SUBMISSION OF REQUEST FOR APPROVAL OF SUBSTITUTES. SUBMISSION SHALL BE MADE IN DUPLICATE ON BIDDER'S LETTERHEAD FOR EACH SUBSTITUTE ITEM. MAKE SEPARATE SUBMISSION FOR EACH SUBSTITUTE ITEM.

REQUEST FOR PRIOR APPROVAL OF A SUBSTITUTE:

PROJECT NO: **18106**

TITLE: **UPSTATE – HODGE ATHLETIC STORAGE RENOVATIONS**

PROJECT LOCATION: **365 Hodge Drive, Spartanburg, South Carolina 29303**

SPECIFICATION OR DRAWING REFERENCE: SECTION

NO. _____ PAGE _____

PARAGRAPH _____ DRAWING NO. _____

SPECIFIED ITEM _____

SUBMITTED ITEM _____

MANUFACTURER _____

LIST OF 3 INSTALLATIONS _____

(GIVE PROJECT NAME AND LOCATION) _____

DIFFERENCE BETWEEN SPECIFIED ITEM AND SUBMITTED ITEM, IF ANY:

ATTACHMENTS, IF ANY, (SEE PARAGRAPH ENTITLED "REQUEST FOR PRIOR APPROVAL")

SIGNED _____ DATE _____

NAME AND ADDRESS OF FIRM _____

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.2 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.

5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect.

1.4 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: Refer to Division 01 Section "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
- B. Unit Price Adjustment: Refer to Division 01 Section "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit price work.

1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2600

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Correlate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
3. Sub-schedules for Phased Work: Where the Work is separated into phases requiring separately phased payments; provide sub-schedules showing values correlated with each phase of payment.

- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
2. Arrange schedule of values consistent with format of AIA Document G703.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of Contract Sum.
 - a. Include separate line items under Contractor and principal subcontracts and other project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
4. **Round amounts to nearest whole dollar; total shall equal the Contract Sum.**
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: Progress payments shall be submitted to Architect by the 25th day of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
- C. Application for Payment Forms: Use AIA Document G702/CMA and AIA Document G703 as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Unless directed otherwise, submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.

2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Schedule of unit prices.
 5. Submittal schedule (preliminary if not final).
 6. List of Contractor's staff assignments.
 7. List of Contractor's principal consultants.
 8. Copies of building permits.
 9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 10. Initial progress report.
 11. Report of preconstruction conference.
 12. Certificates of insurance and insurance policies.
- H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706-1994, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A-1994, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707-1994, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2900

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Coordination drawings.
 - 2. Requests for Information (RFIs).
 - 3. Project meetings.
- B. Related Sections:
 - 1. Division 01 Section "Summary" for a description of the division of work among separate contracts and responsibility for coordination activities not in this Section.
 - 2. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Division 23 Section "HVAC, Ductwork" for general installation, coordination drawings and efforts required with other trades adjacent to ductwork.

1.2 DEFINITIONS

- A. RFI: Request from Owner, Architect, or Contractor seeking information from each other during construction.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-installation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

1.4 COORDINATION DRAWINGS

- A. Coordination Drawings, General: **The Mechanical (HVAC) Contractor** shall prepare coordination drawings in accordance with this Section, where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - b. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire protection, fire alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid.
 2. Plenum Space: Indicate sub framing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings.
 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire protection, fire alarm, and electrical equipment.
 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
 6. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are the Contractor's responsibility.

1.5 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified. This is to occur only after the Contractor has thoroughly reviewed the contract documents before submitting.
 - 1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
 - 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project name.
 - 2. Project number.
 - 3. Date.
 - 4. Name of Contractor.
 - 5. Name of Architect.
 - 6. RFI number, numbered sequentially.
 - 7. RFI subject.
 - 8. Specification Section number and title and related paragraphs, as appropriate.
 - 9. Drawing number and detail references, as appropriate.
 - 10. Field dimensions and conditions, as appropriate.
 - 11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 - 12. Contractor's signature.
 - 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- C. RFI Forms: AIA Document G716 or General Contractor's software-generated form with substantially the same content as indicated above, acceptable to Architect. Form type will be determined at the Pre-construction Conference.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
 - 1. The following RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect's actions on submittals.
 - f. Incomplete RFIs or inaccurately prepared RFIs.
 - 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
 - 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."

- a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
- E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
- F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Maintain the log on a daily basis and make available for view to the architect at any time requested. Submit log monthly. Include the following:
 1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number including RFIs that were dropped and not submitted.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.6 PROJECT MEETINGS

- A. General: General Contractor will schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, General Contractor, and Architect, within three days of the meeting. The architect will provide minutes of the weekly progress meeting(s) for those meetings attended by the architect along and related project field reports, however, this does not release the contractor from his responsibility of providing minutes or any other communication measures required to properly manage the construction.
- B. Preconstruction Conference: General Contractor will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
 1. Attendees: Authorized representatives of Owner, the Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.

- c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for RFIs.
 - g. Procedures for testing and inspecting.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Sustainable design requirements.
 - l. Preparation of record documents.
 - m. Use of the premises.
 - n. Work restrictions.
 - o. Working hours.
 - p. Owner's occupancy requirements.
 - q. Responsibility for temporary facilities and controls.
 - r. Procedures for moisture and mold control.
 - s. Procedures for disruptions and shutdowns.
 - t. Construction waste management and recycling.
 - u. Parking availability.
 - v. Office, work, and storage areas.
 - w. Equipment deliveries and priorities.
 - x. First aid.
 - y. Security.
 - z. Progress cleaning.
3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Pre-installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.
- 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, and the Commissioning Authority, of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility problems.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written recommendations.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.

- s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: General Contractor will conduct progress meetings at weekly intervals.
- 1. Attendees: In addition to representatives of Owner, the Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Progress cleaning.
 - 10) Quality and work standards.
 - 11) Status of correction of deficient items.
 - 12) Field observations.
 - 13) Status of RFIs.
 - 14) Status of proposal requests.
 - 15) Pending changes.
 - 16) Status of Change Orders.
 - 17) Pending claims and disputes.
 - 18) Documentation of information for payment requests.

3. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 3100

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Sections:
 - 1. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 2. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 3. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 DEFINITIONS

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

1.3 ACTION SUBMITTALS

- A. Submittal Schedule: GENERAL CONTRACTOR SHALL Submit a schedule of submittals, arranged in specification sections and listing estimated dates required by construction schedule. This schedule will serve as a master list for ongoing submittal log.
- B. SUBMITTAL ADMINISTRATIVE REQUIREMENTS
- C. Architect's Digital Data Files: Electronic copies of CAD Drawings of the Contract Drawings may be provided by Architect upon contractor's request for Contractor's use in preparing submittals.
 - 1. Architect may furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.
 - a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - b. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement.
 - c. The architectural drawings for shop drawing purposes may be furnished upon the architect's receipt of the Licensing Agreement and upon receipt of payment equal to \$1,500.00 per Revit Model. The purchaser is responsible for adding all addenda items and changes and providing/verifying field measurements.
 - d. Drawings of the architect's consultants may not be available.
 - e. The architect reserves the right to reject any request or digital drawing files.

- D. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. **Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.**
 - a. **Architect and Consultants reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.**
- E. Processing Time: Allow time for submittal review, including time for re-submittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.
1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination. For items requiring color selections, Contractor shall provide actual material color samples for Architects review and selection at the time of shop drawing submittal.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Re-submittal Review: Allow 15 days for review of each re-submittal.
- F. Identification and Information: Submittals for Shop Drawings and Product Data will be accepted by the Architect and Engineers in Electronic Format unless specifically requested to be submitted in hard copy. Place a label or title block on each transmittal with submittal item for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 3. Include the following information for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Name of subcontractor.
 - f. Name of supplier.
 - g. Name of manufacturer.
 - h. Submittal number or other unique identifier, including revision identifier.
 - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Re-submittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
 - i. Number and title of appropriate Specification Section.
 - j. Drawing number and detail references, as appropriate.
 - k. Location(s) where product is to be installed, as appropriate.
 - l. Other necessary identification.

- G. Options: Identify options requiring selection by the Architect.
- H. Deviations: Identify deviations from the Contract Documents on submittals.
- I. Additional Paper Copies: Unless additional copies are required by , and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
- J. Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, or discard submittals received from sources other than Contractor.
 - 1. Transmittal Form: Use AIA Document G810 or other form acceptable to the architect. Indicate specification section submittal is applicable to on the transmittal.
 - 2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- K. Re-submittals: Make re-submittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- L. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms. Maintain electronic copies of all approved submittals and shop drawings at the job site to be available for review by Authority having Jurisdiction and Third Party Inspectors.
- M. Use for Construction: Use only final submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements:
 - 1. Action Submittals: All submittals that pertain to product data, product information, warranties, etc. may be submitted electronically to the Architect's contact. If submittals include shop drawings, submit two paper copies for review, unless otherwise instructed by the Architect or Engineers of Record. If submittal requires a color selection, provide actual samples for color selection along with submittal. Architect may reject the submittal if the submittal is not complete.
 - 2. Informational Submittals: All submittals that pertain to product data, product information, warranties, etc. may be submitted electronically to the Architect's contact.
 - 3. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."

4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a notarized statement on original paper copy certificates and certifications where indicated.
 5. Test and Inspection Reports Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before or concurrent with Samples.
 6. Submit Product Data in the following format:
 - a. Three paper copies of Product Data, unless otherwise indicated. Architect will return two copies.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1067 mm).
 3. Submit Shop Drawings in the following format:
 - a. Electronic Copy in PDF format for initial review.
 - b. If requested by architect or engineer hard copies will be submitted in number requested up to 3 copies.
 - c. After electronic review and return of submittal, hard copies may be requested by architect and/or engineer for records.
 - d. Physical samples representing color or material selections are to be submitted with shop drawings if color or material selections are required by the shop drawing.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit three full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned.

- 1) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least five sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Submit product schedule in the following format:
 - a. Three paper copies of product schedule or list, unless otherwise indicated. Architect will return two copies.
- F. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."
- G. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."
- H. Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."
- I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design.
1. Submit subcontract list in the following format:
 - a. PDF electronic file.
 - b. Number of Copies: Three paper copies of subcontractor list, unless otherwise indicated. Architect will return two copies.
- J. Coordination Drawings: Comply with requirements specified in Division 01 Section "Project Management and Coordination."
- K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on American Welding Society (AWS) forms. Include names of firms and personnel certified.
- M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

- P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- R. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- T. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "Quality Requirements."
- U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- W. Field Test Reports: Submit reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- X. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- Y. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit electronic copy of certificate with the submittal, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Project Closeout and Maintenance/Material Submittals: Refer to requirements in Division 01 Section "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01 3300

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. This Section includes administration and procedural requirements for compliance with the 2015 IBC, Chapter 1 Inspections and Chapter 17 Special Inspections.
- C. South Carolina Office of State Engineers (OSE) – “MANUAL FOR PLANNING & EXECUTION OF STATE PERMANENT IMPROVEMENTS – PART II”, 2016 EDITION or latest edition.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Pre-construction Conference: Upon receipt of the “Notice-to-Proceed” and prior to the start of construction, the contractor shall conduct a Pre-construction Conference. It is the responsibility of the construction manager to notify the architect of the date and time of this conference in a timely manner so that the architect can notify the Office of State Engineers (OSE). A representative from OSE along with representatives from the testing company(ies) and the Chapter 1 and Chapter 17 inspection agencies must be present.
- D. Related Sections include the following:
 - 1. Division 1 Section "Construction Progress Schedule" for developing a schedule of required tests and inspections. The special inspector shall continually coordinate with the construction manager for the time and requirements of required inspections.
 - 2. Division 1 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.
 - 3. Divisions 2 through 33 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

- A. Agency Approval: An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved by South Carolina Office of State Engineers (OSE).
- B. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- C. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- D. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
- E. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.
- F. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- G. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- H. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- I. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- J. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- K. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- L. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five (5) previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.
- C. The special inspector's reports and testing agencies results shall have precedence over reports and test results provided by the contractor.
- D. Where conflict exists between the construction documents and approved shop drawings submittal data, the construction documents shall govern unless the shop drawing/submittal data are more restrictive. All conflicts shall be brought to the attention of the architect.

1.5 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Recognized Agency: For the purposes of this work, only companies utilizing **certified inspectors as designated by the South Carolina Office of the State Engineer** will be accepted for these special inspections. These Companies are listed on their web site however may not be current. Documentation of the individual's certificates scheduled to perform inspections for this project must be submitted for review by the architect prior to award of this work.
- C. Special Inspectors shall keep and distribute records of inspections. The special inspector shall furnish inspection reports to OSE, contractor, architect and owner. Reports shall indicate that work inspected was done in conformance to approved construction documents. Discrepancies shall be brought to the immediate attention of the contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of OSE and to the architect prior to the completion of the phase of the work. A final report documenting required special inspections and correction of any discrepancies noted in the inspections shall be submitted at a point in time agreed upon by the permit applicant and OSE. Prior to the start of work.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Description of test and inspection.
 - 3. Identification of applicable standards.
 - 4. Identification of test and inspection methods.
 - 5. Number of tests and inspections required.
 - 6. Time schedule or time span for tests and inspections.
 - 7. Entity responsible for performing tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.

- E. Reports: Prepare and submit certified written reports that include, but are not limited to, the following:
1. Date of issue.
 2. Project title and number.
 3. Name, address, and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and re-inspecting.
- F. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.
 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect through the Construction Manager, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect or Construction Manager.
 2. Notify Architect and Construction Manager seven (7) days in advance of dates and times when mockups will be constructed.
 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 4. Obtain Architect's and Construction Manager's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven (7) days for initial review and each re-review of each mockup.
 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 6. Demolish and remove mockups when directed, unless otherwise indicated.

- K. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 2 through 33.

1.7 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 - 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 - 2. Notify testing agencies at least Forty Eight (48) hours in advance of time when Work that requires testing or inspecting will be performed.
 - 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
 - 6. The contractor shall be responsible for costs of: Re-testing and re-inspection of materials, work and/or products that do not meet requirements of the construction documents and shop drawings/submittal data.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."
- D. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with the Architect, Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Architect, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within thirty (30) days of date established for commencement of the Work the Notice to Proceed.
1. Distribution: Distribute schedule to Owner, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.8 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Shall be as listed herein.
- B. Special Tests and Inspections: Conducted by a qualified **special inspector designated by the South Carolina Office of State Engineers (OSE)** as indicated in individual Specification Sections, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Substantial Completion which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 6. Retesting and re-inspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 ACCEPTABLE TESTING AGENCIES

Acceptable companies shall be as designated by the South Carolina Office of State Engineers (OSE).

3.2 SPECIAL INSPECTIONS REQUIRED CHAPTER 17:

- A. Seismic Design Category: The Seismic Design Category for this project is “C”.
- B. Facility Classification: As stated in Section 1604.5 of the 2015 IBC, this facility is classified as a “Non-Essential Facility”.
- C. IBC 2015 Chapter 17 Inspections, INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

STATEMENT OF SPECIAL INSPECTIONS				
MATERIAL	TYPE OF INSPECTION	FREQUENCY	SPECIFICATION REFERENCE	INSPECTION BY
STEEL				
High strength bolts, nuts, washers	Conform to ASTM stds specified, certificate of compliance	Periodic	1705.2	3rd Party Special Inspector
Material verification	Conform to AISC 360 or ASTM stds specified, certificate of compliance	Periodic	1705.2.1	3rd Party Special Inspector
Welds	Welding inspection and welding inspector qualifications	Periodic	1705.2.1	3rd Party Special Inspector
MASONRY				
Mortar and grout mix	Inspect proportioning, mixing and retempering	Periodic	1705.4	3rd Party Special Inspector
Mortar joints	Inspect tooling and filling of head joints	Periodic	1705.4	3rd Party Special Inspector
Reinforcement and connectors	Size, grade, type, placement, positioning, and lapping	Periodic	1705.4	3rd Party Special Inspector
Structural masonry elements	Size and location	Periodic	1705.4	3rd Party Special Inspector
Installation of masonry	Inspect size, layout, bonding, and placement	Periodic	1705.4	3rd Party Special Inspector
Anchors	Type, size, and location. Detail of anchorage to other const.	Periodic	1705.4	3rd Party Special Inspector
Testing	Compressive strength of mortar cubes and grout samples	Continuous	1705.4	3rd Party Special Inspector
SEISMIC RESISTANCE				
Nonstructural components	Nonstructural components, supports, or attachments	Per 1705.13.2	1705.13.2	3rd Party Special Inspector
FIRE-RESISTANT PENETRATIONS AND JOINTS				
Penetration firestops	Verify appropriate system specified and installed	Periodic	1705.17.1 / ASTM E2174	3rd Party Special Inspector
Fire-resistant joint systems	Verify appropriate system specified and installed	Periodic	1705.17.2 / ASTM E2293	3rd Party Special Inspector

3.3 INSPECTIONS REQUIRED CHAPTER 1:

A. IBC Chapter 1 Inspections

1. Chapter 1 Inspections for this project shall be provided by individuals approved by Office of State Engineers. The required Inspections for this project include but are not limited to:

- 109.3.2 Concrete slab or under floor inspection
- 109.3.3. Lowest floor elevation.
- 109.3.4 Frame inspection.
- 109.3.5 Lath or gypsum board inspection.
- 109.3.6 Fire-resistant penetrations.
- 109.3.7 Energy efficiency inspections.
- S406.6 Inspection of fill. Placement of the fill material shall be inspected by the code official.

RR109.1.1. Foundation inspection: Inspection of the foundation shall be made after poles or piers or trenches or basement areas are excavated and any required forms erected and any required reinforcing steel is in place prior to the placing of concrete. The foundation inspection shall include excavations for thickened slabs intended for the support of bearing walls, partitions, structural supports, or equipment.

RR109.1.2 Plumbing, mechanical, gas and electrical systems inspection: Rough inspection of plumbing, appliances are set or installed, and prior to farming inspection.

Mechanical Code: M107.1 Required Inspections

1. Underground inspection shall be made after trenches or ditches are excavated and bedded, piping installed, and before backfill is put in place.
2. Rough-in inspection shall be made after the roof, framing, fireblocking, and bracing are in place and all ducting and other components to be concealed are completed, and prior to the installation of wall or ceiling membranes.

Plumbing Code: P107.1 Required Inspection and testing.

1. Underground inspection shall be made after trenches or ditches are excavated and bedded, piping installed, and before backfill is put in place.
2. Rough-in inspection shall be made after the roof, framing, fireblocking, and bracing are in place and all ducting and other components to be concealed are completed, and prior to the installation of wall or ceiling membranes.

Electrical Code:

1. Underground inspection shall be made after trenches or ditches are excavated and bedded, piping installed, and before backfill is put in place.
2. Rough-in inspection shall be made after the roof, framing, fire-blocking, and bracing are in place and all ducting and other components to be concealed are completed and prior to the installation of concealing construction.

3.4 TEST AND INSPECTION LOG AND FORMS

A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours

- C. Maintain all logs, inspection reports and related summary sheets as required by Office of State Engineers (OSE).

3.5 REPAIR AND PROTECTION

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

3.6 TESTING AND INSPECTION

- A. Reference related specifications for the minimum level of inspections and testing. Provide additional inspections and testing as necessary to determine compliance with the construction drawings and to satisfy IBC requirements for Chapter 1 Inspections and Chapter 17 Special Inspections.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Section:
 - 1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.

1.2 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, testing agencies, and authorities having jurisdiction.

1.3 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in and ICC/ANSI A117.1.

1.4 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS (as required by GC for security)

- A. Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts.
- B. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts.

posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide concrete or galvanized steel bases for supporting posts.

2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Existing house on site with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate project meetings specified in other Division 01 Sections. Keep office clean and orderly.
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
- D. Provide temporary toilet facilities on site for all construction related personnel. Position portable toilets in a location agreeable to Owner.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - 3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction and clean HVAC system as required in Division 01 Section "Closeout Procedures."

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 - 1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 - 1. Connect temporary sewers to municipal system indicated as directed by authorities having jurisdiction.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
 - 1. Provide and maintain suitable quality water service for construction operations at time of project mobilization.
 - 2. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
 - 1. Provide power service required from utility source.
 - 2. Provide power outlets for construction operations, with branch wiring and distribution boxes located at each floor. Provide flexible power cords as required.
 - 3. Provide main service disconnect and over-current protection at convenient location and meter.
 - 4. Permanent convenience receptacles may be utilized during construction.
 - 5. Provide adequate distribution equipment, wiring and outlets to provide single phase branch circuits for power and lighting.
- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 - 2. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
 - 3. Maintain lighting and provide routine repairs.

4. Permanent building lighting may be utilized during construction.
- I. Electronic Communication Service: Provide a desktop computer in the primary field office adequate for use by Architect and Owner to access project electronic documents and maintain electronic communications. Equip computer with not less than the following:
 1. Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these 3 functions.
 2. Internet Service: Broadband modem, router and ISP, equipped with hardware firewall, providing adequate memory for proper download speeds at each computer.
 3. Internet Security: Integrated software, providing software firewall, virus, spyware, phishing and spam protection in a combined application.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
 1. If required provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
 2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.
 1. Where required, provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
- C. Temporary Use of Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
 1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
 2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Division 31 Section "Earth Moving."
 3. Recondition base after temporary use, including removing contaminated material, regrading, proof-rolling, compacting, and testing.
 4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Division 32 Section "Asphalt Paving."
- D. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 2. Maintain access for fire-fighting equipment and access to fire hydrants.

- E. Parking: Provide temporary parking areas for construction personnel.
- F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
 - 2. Remove snow and ice as required to minimize accumulations.
- G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
 - 1. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
 - 2. Maintain and touchup signs so they are legible at all times.
- H. Waste Disposal Facilities: Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."
- I. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements.
- J. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- K. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- L. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- B. Temporary Erosion and Sedimentation Control: Comply with requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified in Division 31 Section "Site Clearing."
- C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

- E. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
 - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- F. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- H. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather-tight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
- J. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
 - 1. Prohibit smoking in construction areas.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION 01 5000

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Section:
 - 1. Division 01 Section "Substitution Procedures" for requests for substitutions.

1.2 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.3 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 working days of receipt of request, or seven working days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."

- b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

- B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

- C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 3. Refer to Divisions 02 through 49. Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
- B. Product Selection Procedures:
1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 3. Products:
 - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered, unless pre-approved prior to the bid.
 - b. Non-restricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:
 - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless pre-approved prior to the bid.
 - b. Non-restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
 1. Evidence that the proposed product does not require revisions to the Contract Documents, which it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 6000

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Cutting and patching.
 - 5. Coordination of Owner-installed products.
 - 6. Progress cleaning.
 - 7. Starting and adjusting.
 - 8. Protection of installed construction.
 - 9. Correction of the Work.
- B. Related Sections:
 - 1. Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
 - 2. Division 07 Section "Caulking & Sealants" for firestopping use in patching penetrations in fire-rated construction.

1.2 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from the Architect before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
 - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 - 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 - 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.3 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to the Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Temporary Support: Provide temporary support of work to be cut.
- C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- D. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.
- H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Division 01 Section "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.9 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 7300

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of a building or structure.
 - 2. Demolition and removal of selected site elements.
 - 3. Repair procedures for selective demolition operations.
- B. Related Sections include the following:
 - 1. Division 1 Section "Summary" for use of the premises and phasing requirements.
 - 2. Division 1 Section "Work Restrictions" for restrictions on use of the premises due to Owner or tenant occupancy.
 - 3. Division 1 Section "Construction Progress Documentation" for preconstruction photographs taken before selective demolition.
 - 4. Division 1 Section "Photographic Documentation" for preconstruction photographs taken before selective demolition.
 - 5. Division 1 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
 - 6. Division 1 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
 - 7. Division 2 Section "Building Demolition" for demolition of entire buildings, structures, and site improvements.
 - 8. Division 2 Section "Site Clearing" for site clearing and removal of above- and below-grade improvements.
 - 9. Division 23 Sections for demolishing, cutting, patching, or relocating mechanical items.
 - 10. Division 26 Sections for demolishing, cutting, patching, or relocating electrical items.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.
- B. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.
 - 1. Coordinate with Owner's historical adviser, who will establish special procedures for removal and salvage.

1.5 SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's school faculty and students on-site operations are uninterrupted.
 - 2. Interruption of utility services.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Locations of temporary partitions and means of egress.
 - 6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- D. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- E. Pre-demolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.
- F. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

- B. Professional Engineer Qualifications: Comply with Division 1 Section "Quality Requirements."
- C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. Standards: Comply with ANSI A10.6 and NFPA 241.

1.7 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
 - 1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- C. Owner assumes no responsibility for condition of areas to be selectively demolished.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- D. Hazardous Materials: Hazardous materials are present in building to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
 - 1. Hazardous material remediation is specified elsewhere in the Contract Documents.
 - 2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
 - 3. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site will not be permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.
 - 1. If possible, retain original Installer or fabricator to patch the exposed Work listed below that is damaged during selective demolition. If it is impossible to engage

original Installer or fabricator, engage another recognized experienced and specialized firm.

- a. Processed concrete finishes.
- b. Stonework and stone masonry.
- c. Matched-veneer woodwork.
- d. Preformed metal panels.
- e. Firestopping.
- f. Window wall system.
- g. Fluid-applied flooring.
- h. Aggregate wall coating.
- i. HVAC enclosures, cabinets, or covers.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
 - 1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 2. Use materials whose installed performance equals or surpasses that of existing materials.
- B. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.
- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
 - 1. Provide at least 72 hours' notice to Owner if shutdown of service is required during changeover.
- C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.
 - 3. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
 - 4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
- D. Utility Requirements: Refer to Sections 22 through 26 for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

- A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Pest Control: Employ a certified, licensed exterminator to treat building and to control rodents and vermin before and during selective demolition operations.
- C. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
 - 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 - 3. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 4. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
- D. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
- E. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- F. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
- G. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

3.4 POLLUTION CONTROLS

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
 2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly.
 10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
- B. Existing Facilities: Comply with building manager's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.
- C. Removed and Salvaged Items: Comply with the following:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items: Comply with the following:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to

a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

- F. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.
- G. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.
- H. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- I. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- J. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.
 - 1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.
- K. Roofing: Remove no more existing roofing than can be covered in one day by new roofing. Refer to applicable Division 7 Section for new roofing requirements.
- L. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

3.6 PATCHING AND REPAIRS

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Patching: Comply with Division 1 Section "Cutting and Patching."
- C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
 - 1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.
- D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.
- E. Floors and Walls: Where walls or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

1. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
 2. Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.
 3. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
- F. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 01 7320

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
- B. Related Sections:
 - 1. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 2. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 3. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.2 SUBSTANTIAL COMPLETION

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

- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
 - 1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - 2. Results of completed inspection will form the basis of requirements for final completion.

1.3 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
 - 1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
 - 2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 4. Submit pest-control final inspection report and warranty.
 - 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 - 1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
 - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 - 3. Submit list of incomplete items in the following format:
 - a. Three paper copies, unless otherwise indicated. Architect will return two copies.

1.5 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
 - 1. Use cleaning products that meet Green Seal GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

- b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.
 - m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - r. Leave Project clean and ready for occupancy.
- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.

END OF SECTION 01 7700

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Operation manuals for systems, subsystems, and equipment.
 - 3. Product maintenance manuals.
 - 4. Systems and equipment maintenance manuals.
- B. Related Sections:
 - 1. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.2 CLOSEOUT SUBMITTALS

- A. Format: Submit operations and maintenance manuals in the following format:
 - 1. PDF electronic file. Assemble each manual into a composite electronically-indexed file. Submit on digital media acceptable to Architect.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically-linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
 - 2. Three (3 or number requested by Owner up to maximum 3) paper copies AFTER the Electronic copy has been approved as complete and acceptable by architects and engineer. One (1) complete PDF electronic submittal of the hard copy for Owner and One (1) complete PDF electronic submittal of the hard copy for Architect and Engineers. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves.
- B. Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion. Architect will return copy with comments.
 - 1. Correct or modify each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 REQUIREMENTS FOR OPERATION AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Architect.
7. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
8. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.3 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:

1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.4 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- C. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- D. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of operation and maintenance manuals.
- E. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 7823

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. Related Sections:
 - 1. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 2. Divisions 02 through 33 Sections for specific requirements for project record documents of the Work in those Sections.

1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit copies of record Drawings as follows:
 - a. Initial Submittal: Contractor shall submit one paper copy set of marked-up record prints. Architect will review and indicate whether general scope of changes and additional information recorded are acceptable.
 - b. Final Submittal: Contractor shall submit within 30 days after substantial completion, one durable reproducible record drawing set showing all significant changes to the Work made during construction. Drawings shall be stamped as "Project Record Drawings". Print each Drawing, whether or not changes and additional information were recorded. In addition, the contractor shall provide one electronic file copy of the record documents in PDF format.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings.
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Record data as soon as possible after obtaining it.

- c. Record and check the markup before enclosing concealed installations.
 2. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.
 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared and record Drawings into a durable reproducible manageable set. Bind the set with a durable paper cover sheet. Include identification on cover sheets.
 2. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 3. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

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

END OF SECTION 01 7839

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated steel and aluminum items.
- B. The extent of miscellaneous metal work is shown on the drawings and includes items fabricated from iron steel shape, plates, bars, strips, tubes, cables, pipes and castings which are not a part of the structural steel or other metal systems in other sections of these specifications, and miscellaneous aluminum items and shapes.

1.02 RELATED REQUIREMENTS

- A. Section 09 9123 – Interior Paint.

1.03 REFERENCE STANDARDS

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels; 2005.
- B. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements; 2002.
- C. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2008.
- D. ASTM A 53/A 53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2007.
- E. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2009.
- F. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- G. ASTM A 283/A 283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2003 (Reapproved 2007).
- H. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2009a.
- I. ASTM A 325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Tensile Strength (Metric); 2009.
- J. ASTM A 501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2007.
- K. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.
- L. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2007.
- M. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2008.
- N. ASTM B 221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2007.
- O. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2007.

- P. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2010.
- Q. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; American Welding Society; 2003, and Errata 2004.
- R. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2004).
- S. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).
- T. SSPC-SP 2 - Hand Tool Cleaning; Society for Protective Coatings; 1982 (Ed. 2004).

1.04 SUBMITTALS

- A. See Section 01 33 00 - Submittal Procedures, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

PART 2 PRODUCTS

2.01 MATERIALS - GENERAL

- A. For the fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.
- B. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes.
- C. Materials shall be free from defects impairing strength, durability and appearance and of the best commercial quality.

2.02 MATERIALS - STEEL

- A. Steel Sections: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A 501 hot-formed structural tubing.
- C. Plates: ASTM A 283.
- D. Steel Bars and Bar Size Shapes: ASTM A306, Grade 65, or ASTM A36.
- E. Pipe: ASTM A 53/A 53M, Grade B Schedule 40, hot-dip galvanized finish.
- F. Slotted Channel Framing: ASTM A 653, Grade 33.
- G. Slotted Channel Fittings: ASTM A 1011/A 1011M.
- H. Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, galvanized to ASTM A 153/A 153M where connecting galvanized components.
- I. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- J. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

- K. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type II - Organic, Level 1, Type III zinc dust complying with VOC limitations of authorities having jurisdiction.
 - 1. Galvanizing Repair Paint shall be ZRC Galvilite as manufactured by ZRC Worldwide or approved equal.

2.03 MATERIALS - GRAY IRON CASTINGS

- A. ASTM A48, Class 30.

2.04 MATERIALS - MALLEABLE IRON CASTINGS:

- A. ASTM A47, Grade as selected.

2.05 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B 221 (ASTM B 221M), 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B 209 (ASTM B 209M), 5052 alloy, H32 or H22 temper.
- C. Bolts, Nuts, and Washers: Stainless steel.
- D. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.06 ACCESSORIES

- A. Masonry Anchorage Devices: Hilti "Sleeve Expansion Anchors" or Hilti "HAS Adhesive Anchors" as indicated or approved equal.
- B. Toggle Bolts: Tumble wing type: FS FF B 588, a type, class and style as required.
- C. Fasteners: Provide zinc coated fasteners, with galvanizing complying with ASTM A153, for exterior use or where built into exterior walls. Select fasteners for the type, grade and class required for the installation of miscellaneous metal items.
- D. Welding Materials: Provide the type and alloy of filler metal and electrodes in compliance with the recommendations of the producer of the metal to be welded and as required for color match, strength and compatibility in the fabricated items.

2.07 FABRICATION

- A. Field measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to ensure proper fitting of the work. However, do not delay job progress; allow for trimming and fitting wherever the taking of field measurements before fabrication might delay the work.
- B. Form Exposed Work: True to line and level with accurate angles and surfaces and straight sharp edges.
- C. Fit and shop assemble items in largest practical sections, for delivery to site.
- D. Fabricate items with joints tightly fitted and secured.
- E. Continuously seal joined members by continuous welds.
- F. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- G. Form bent metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- H. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- I. Supply components required for anchorage of fabrications. Fabricate anchors and related

components of same material and finish as fabrication, except where specifically noted otherwise.

1. Provide setting drawings, templates, instructions and directions for installation of anchorage devices such as concrete inserts, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery with other work to avoid delay.
- J. Shop Painting: Shop paint miscellaneous metal work, except members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded and galvanized surfaces, unless otherwise specified. Apply one shop coat of lead-free rust inhibitive alkyd metal primer to fabricated metal items, except apply two coats of paint to surfaces inaccessible after assembly or erection.

2.08 FABRICATED ITEMS

- A. Ladders at Roof Hatch, Elevator pit, and Roofs: Steel; in compliance with ANSI A14.3; with mounting brackets and attachments; galvanized and primed finish.
1. Side Rails: 3/8 x 2 inches members spaced at 20 inches.
 2. Rungs: one inch diameter solid round bar spaced 12 inches on center.
 3. Space rungs 7 inches from wall surface.
 4. Wall Brackets: 2 inch (50 mm) by 1/4 inch (6 mm) minimum flat bar steel wall brackets.
 5. Floor Brackets: Anchor side rails to floor with 2 by 1/4 inch (50 by 6 mm) minimum flat bar steel floor brackets. Allow 7 inches (180 mm) minimum clearance from wall to center line of rungs.
- B. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; galvanized finish.
- C. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking, and masonry; galvanized finish.
- D. Lintels: As detailed; galvanized finish. See structural drawings for lintel schedule.
- E. Sill Angles/plates for Tempered Glass Railing Assemblies: ASTM A 36/A 36M steel angles/plates with anchoring devices and sizes as indicated in shop drawings for railing assembly, drilled and tapped for fastener types, sizes, and spacing indicated, prime paint finish.
- F. Carpenter's Iron Work: Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing and supporting woodwork and for anchoring or securing woodwork to concrete or other structures. Manufacture or fabricate items of sizes, shapes and dimensions required. Furnish malleable iron washers for head nuts which bear on wood structural connections, elsewhere, furnish steel washers.
- G. Door Frames for Overhead Door Openings and Wall Openings: Channel sections; prime paint finish.
- H. Elevator Hoistway Divider Beams: Beam sections; prime paint finish.
- I. Slotted Channel Framing: Fabricate channels and fittings from structural steel complying with the referenced standards; factory-applied, rust-inhibiting thermoset acrylic enamel finish.
- J. Stair Nosing: Cast Aluminum Safety Nosing with standard abrasive cross-hatch finish, three inches wide and terminating six inches from end of tread. Complete with strap-anchors or integrally cast anchors 12 inches o.c. for embedding into concrete with top flush with tread surface.

2.09 FINISHES - STEEL

- A. Prime paint all steel items.
1. Exceptions: Galvanize items to be embedded in concrete or masonry.
 2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is

required, and items to be covered with sprayed fireproofing.

- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A 123/A 123M requirements. Provide minimum 2.0 oz/sq ft galvanized coating. Grade 85.
- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A 123/A 123M requirements.

2.10 FINISHES - ALUMINUM

- A. Exterior Aluminum Surfaces: high performance organic coating.
- B. Interior Aluminum Surfaces: high performance organic coating.
- C. High Performance Organic Coating System: AAMA 2604 multiple coat, thermally cured fluoropolymer system; color as selected from manufacturer's standard colors.
- D. Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

2.11 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind joints smooth and touch up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot dip galvanized after fabrication and are intended for bolted or screwed field connections.

- C. Do not cut or abrade members with finishes which cannot be completely restored in the field. Where cutting, welding and grinding are required for fitting and jointing of the work, restore finishes to eliminate any evidence of such corrective work.
- D. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- E. Field weld components indicated.
- F. Perform field welding in accordance with AWS D1.1/D1.1M.
- G. Obtain approval prior to site cutting or making adjustments not scheduled.
- H. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION 05 55 00

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Firestopping and smoke seal (also use for Top-of-Wall Sound Seal Joints) systems.
- B. Firestopping of all joints and penetrations in fire-resistance rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 SCOPE

- A. All firestopping on this project is to be installed by a single source subcontractor certified to install through-penetration firestopping systems.
- B. Contractor shall be responsible to coordinate work of all trades to insure that sleeves or core-drilled holes are the proper size to accommodate through penetrating items and minimize number of penetrations in fire-rated assemblies. All voids between sleeves or core-drilled holes and penetrating items shall be firestopped in accordance with this section.
- C. The firestopping manufacturer's representative is required to attend all Overhead and Final Inspections. Contractor is responsible for all communication and coordination with the manufacturer's representative so that they are in attendance.
- D. Contractor shall be responsible for any and all costs associated with any Engineering Judgment Reports as may be required during construction.
- E. The work of this section includes only tested firestop systems used in specific locations as follows:
 - 1. Penetrations for the passage of duct, cable, cable tray, conduit, piping, electrical busways and raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor/ceiling assemblies), and vertical service shaft walls and partitions.
 - 2. Safing slot gaps between edge of floor slabs and curtain walls.
 - 3. Openings between structurally separate sections of walls or floors.
 - 4. Gaps between the top of walls and ceilings or roof assemblies.
 - 5. Expansion joints in walls and floors.
 - 6. Openings and penetrations in fire-rated partitions or walls containing fire doors.
 - 7. Openings around structural members which penetrate floors or walls.

1.03 DEFINITIONS

- A. Firestopping: Material or combination of materials used to retain integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke, and hot gases through penetrations in, or construction joints between, fire rated wall and floor assemblies.
- B. Smoke Seals: Material or combination of materials used to resist the passage of smoke at joints and penetrations.
- C. Top-of-Wall Sounds Seals: For top-of- wall conditions at walls indicated as sound walls, use the same material or combination of materials used to resist the passage of smoke at joints and penetrations.

1.04 RELATED REQUIREMENTS

- A. Section 01 7320 – Selective Demolition.

1.05 REFERENCE STANDARDS

- A. ANSI/UL 2079 - Tests for Fire Resistance of Building Joint Systems
- B. ASTM E 84, "Standard Test Method for Surface Burning Characteristics of Building Materials"

- C. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2009c.
- D. ASTM E 814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops; current edition.
- E. ASTM E 1966 - Standard Test Method for Fire Resistive Joint Systems.
- F. ASTM E 2174 - Standard Practice for On-site Inspection of Installed Firestops.
- G. ASTM E 2307, "Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-story Test Apparatus"
- H. IFC (International Firestop Council) - Guidelines for Evaluating Firestop Systems Engineering Judgements.
- I. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- J. FM 4991 - Approval of Firestop Contractors; Factory Mutual Research Corporation; current edition.
- K. FM P7825 - Approval Guide; Factory Mutual Research Corporation.
- L. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.
- M. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.
- N. UL 1479, "Fire Tests of Through-Penetration Firestops"

1.06 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate installation of firestopping among all trades on the project. All firestopping throughout the building shall utilize the same manufacturer's products to ensure compatibility and consistency of penetration seals. If multi-prime contractors are awarded different scopes of work for the project, the same fire stopping and smoke seals contractor will still be used. A coordination meeting will be held with all contractors prior to beginning firestopping work.
- B. Preinstallation Meeting: Convene one week before starting work of this section.
 - 1. Review preparation and installation procedures. Related work shall be coordinated and scheduled to provide proper sequence of work.
 - 2. Include installer, manufacturer's representative, General Contractor, Construction Manager, Architect, associated trades that will be performing firestopping work, Owner and others directly concerned with penetrations and joints in fire-resistive construction.
 - 3. Construction Manager shall record discussions of conference, decisions, agreements and disagreements reached and furnish a copy to each attendee.
 - 4. Agenda shall include allowable size of holes in fire resistive construction, training requirements for installation of firestopping, coordination of related trades and code requirements applying to firestopping.

1.07 SUBMITTALS

- A. See Section 01 3300 - Submittal Procedures, for submittal procedures.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
- C. Product Data: Provide data on product characteristics, performance ratings, limitations, and Material Safety Data Sheets.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements and are suitable for the use intended.
- F. Qualification statements for installing mechanics.

1.08 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the specified fire ratings when tested in accordance with methods indicated.
 - 1. Listing in the current-year classification or certification books of UL, FM, or ITS (Warnock Hersey) will be considered as constituting an acceptable test report.
 - a. For those firestop applications that exist for which no tested system is available through any manufacturer, a manufacturer's engineering judgment derived from similar tested system designs or other tests will be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineering judgement drawings must follow requirements set forth by the International Firestop Council.
 - 2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
 - 3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.
 - 4. Firestop System installation must meet requirements of ASTM E-814, ASTM E1966, or ANSI/UL 2079, tested assemblies that provide a fire rating equal to that of construction being penetrated.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
 - 1. A manufacturer's direct representative (not distributor or agent) to be on-site during initial installation of firestop systems to train appropriate contractor personnel in proper selection and installation procedures. This will be done per manufacturer's written recommendations published in their literature and drawing details.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
 - 1. With minimum 3 years experience installing work of this type.
 - 2. Able to show at least 5 satisfactorily completed projects of comparable size and type.
 - 3. Installer shall be licensed, or otherwise qualified by the firestopping manufacturer as having been provided the necessary training by the manufacturer (not by a distributor or agent) to install manufacturer's products per specified requirements. A supplier's willingness to sell its firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer. Certificates of qualifications of the installers are to be submitted as part of the submittal package.
- D. Proposed firestop materials and methods shall conform to applicable governing codes having local jurisdiction.
- E. Firestop Systems do not re-establish the structural integrity of load bearing partitions/assemblies, or support live loads and traffic. Installer shall consult the structural engineer prior to penetrating any load bearing assembly.
- F. Single Source: All firestopping products are to be obtained from a single manufacturer and installed as an approved system as recommended and tested by the manufacturer.
 - 1. All penetrations through fire-resistive and smoke-resistive construction in the course of performing the work shall comply with this section for all firestopping.
 - 2. Products used for firestopping and smoke seals shall be by the same manufacturer throughout the building for all trades. All trades are responsible to coordinate with the Building and Finishes Contractor/General Contractor and Construction Manager for all

firestopping work.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials undamaged in manufacturer's clearly labeled, unopened containers, identified with brand, type, and UL label where applicable.
- B. Coordinate delivery of materials with scheduled installation date to allow minimum storage time at jobsite.
- C. Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements, including temperature restrictions.
- D. Comply with recommended procedures, precautions or remedies described in material safety data sheets as applicable.
- E. Do not use damaged or expired materials.

1.10 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

1.11 COORDINATION

- A. Coordinate construction of openings, penetrations and construction joints to ensure that the fire stop systems are installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration fire stop systems. Coordinate construction and sizing of joints to ensure that fire-resistive joint systems are installed according to specified requirements.
- C. Coordinate fire stopping with other trades so that obstructions are not placed in the way prior to the installation of the fire stop systems.
- D. Do not cover up through-penetration fire stop and joint system installations that will become concealed behind other construction until each installation has been examined by the Owner's testing and inspection agency and it has been determined that all deficiencies have been corrected.

PART 2 PRODUCTS

2.01 FIRESTOPPING, GENERAL:

- A. Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.
- B. Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.
- C. Provide materials and systems fully capable of maintaining an effective barrier against gases, flame and smoke.
- D. Firestopping materials are either "cast-in-place" (integral with concrete placement) or "post-installed." Provide cast-in-place firestop devices prior to concrete placement.

2.02 ACCEPTABLE MANUFACTURERS

- A. Hilti, Inc., Tulsa, Oklahoma
 - 1. (800) 879-8000
- B. 3M Fire Protection Products, St. Paul, Minnesota
 - 1. (612) 736-0203
- C. Tremco, Dunwoody, GA
 - 1. (800) 852-8173
- D. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 FIRESTOPPING SYSTEMS

- A. Firestopping:
 - 1. Fire Ratings: Use any system listed by UL or FM or tested in accordance with ASTM E 814 that has F Rating equal to fire rating of penetrated assembly and T Rating Equal to F Rating and that meets all other specified requirements.
 - a. Fire Ratings: See drawings for required systems and ratings.
 - 2. Provide a firestop system with an Assembly Rating as determined by UL 2079 which is equal to the time rating of construction joint assembly.

2.04 MATERIALS

- A. Use only firestop products that have been UL 1479 or ASTM E 814, or UL 2079, tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.
- B. Firestopping Sealants: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.
- C. Elastomeric Silicone Firestopping: Single component silicone elastomeric compound and compatible silicone sealant;
 - 1. Manufacturers:
 - a. 3M Fire Protection Products; Product Fire Barrier CP25, Fire Barrier FD 150+, Fire Barrier IC 15WB+: www.3m.com/firestop.
 - b. Hilti, Inc; Product CP606 Flexible Firestop Sealant, Hilti CP 604 Self-leveling Firestop Sealant or CP601S Elastomeric Firestop Sealant as applicable to conditions: www.us.hilti.com.
 - c. Tremco, Inc.; Products TREMStop Flexible Acrylic Sealant, Fyre-Sil Fire Resistant Silicone Sealant, Fyre-Sil S/L Self-Leveling Fire Resistant Silicone Sealant, Fyre-Shield Fire Resistant Ceramic Based Sealant: www.tremcosealants.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- D. Smoke Seal Joints and Penetrations: Sealant compound to resist the passage of smoke in joints and penetrations.
 - 1. Manufacturers
 - a. 3M Fire Protection Products; Product Silicone RTV Foam, Fire Barrier CP25, Fire Barrier FD 150+: www.3m.com/firestop.
 - b. Hilti, Inc; Product FS-ONE Intumescent Firestop Sealant, CP506 Smoke and Acoustic Sealant, CP572 Smoke and Acoustic Spray, CP606 Flexible Firestop Sealant, Hilti CP 604 Self-leveling Firestop Sealant or CP601S Elastomeric Firestop Sealant as applicable to conditions; www.us.hilti.com.
 - c. Thermafiber, Inc; Product - Thermafiber Smoke Seal Compound: www.thermafiber.com.
 - d. Tremco, Inc.; Products TREMStop Flexible Acrylic Sealant, TREMStop Acrylic SP Sealant, Fyre-Sil Fire Resistant Silicone Sealant, TREMStop Smoke and Sound

- Sealant, TREMStop Smoke and Sound SP; www.tremcosealants.com.
- e. Substitutions: See Section 01 6000 - Product Requirements.
- E. Fiber Firestopping: Mineral fiber insulation used in conjunction with elastomeric surface sealer forming airtight bond to opening. Provide products as required to meet tested conditions.
1. ASTM C 612; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E 84.
 2. Provide foil facing on one side; with flame spread index of 25 or less, when tested in accordance with ASTM E 84.
 3. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E 84.
 4. Board Size: 48 x 48 inch.
 5. Board Thickness: 1 inch.
 6. Density: 8.0 lb/cu ft.
 7. Manufacturers:
 - a. Hilti, Inc.; Products Hilti CP 777 Speed Plugs or Hilti CP 767 Speed Strips
 - b. Thermafiber, Inc; Product Thermafiber Safing Insulation, Thermafiber FireSpan 90: www.thermafiber.com.
 - c. Tremco, Inc.; Product: Tremstop FS Blanket: www.tremcofirestop.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- F. Curtainwall Insulation: Mineral fiber insulation used in conjunction with elastomeric surface sealer forming airtight bond to opening to seal edge of floor slab against fire and smoke. Provide products as required to meet tested conditions.
1. ASTM C 612; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E 84.
 2. Provide foil facing on one side; with flame spread index of 25 or less, when tested in accordance with ASTM E 84.
 3. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E 84.
 4. Board Size: 48 x 48 inch and 4 x 48 inch strips
 5. Board Thickness: 2 inches.
 6. Thermal Resistance: R of 4.2 per inch.
 7. Density: 8.0 lb/cu ft.
 8. Vapor Permeability: 0.02 perms.
 9. Manufacturers:
 - a. Thermafiber, Inc; Product Thermafiber FireSpan 90: www.thermafiber.com.
 - b. Tremco, Inc.; Product: Tremstop FS Blanket: www.tremcofirestop.com.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- G. Firestop Devices - Wrap Type: Mechanical device with incombustible filler and sheet stainless steel jacket and collar, intended to be installed after penetrating item has been installed;
1. Manufacturers:
 - a. 3M Fire Protection Products; Product Fire Barrier FS-195 Wrap/Strip: www.3m.com/firestop.
 - b. Hilti, Inc; Product CP 648E/CP648S Wrap Strips, CP 643N Firestop Collar, CP 644 Firestop Collar: www.us.hilti.com.
 - c. Tremco, Inc. Product TREMStop WS, TREMStop D, TREMStop MCR
 - d. Substitutions: See Section 01-6000 - Product Requirements.
- H. Fire Barrier Spray at construction joints, such as top of fire-rated walls:
1. Manufacturers:
 - a. 3M Fire Protection Products; Product 3M FireDam Spray 100: www.3m.com/firestop
 - b. Hilti, Inc.; Product CP672 Speed Spray or CFP-S WB Firestop Joint Spray: www.us.hilti.com.
 - c. Tremco, Inc.; Product TREMStop Acrylic SP Sprayable Flexible Acrylic Sealant,

- DYmeric, DYmonic, DYmeric 511, THC 906.
 - d. Substitutions: See Section 01600 - Product Requirements.
 - 2. Firestop Devices - Cast-In Type: Sleeve and sealing material, intended to be cast in concrete floor forms or in concrete on metal deck, not requiring any additional materials to achieve penetration seal.
 - a. Durability and Longevity: Permanent.
 - b. Manufacturers:
 - 1) 3M Fire Protection Products: www.3m.com/firestop.
 - 2) Hilti, Inc; Product CP 680 Firestop Cast-in Device: www.us.hilti.com.
 - 3) Substitutions: See Section 01-6000 - Product Requirements.
 - I. Intumescent Putty: Compound that expands on exposure to surface heat gain;
 - 1. Manufacturers:
 - a. 3M Fire Protection Products; Product Fire Barrier Moldable Putty or CS 195 Composite Sheet: www.3m.com/firestop.
 - b. Hilti, Inc; Product CP618 Firestop Putty Stick or CP 658T Firestop Plug: www.us.hilti.com.
 - c. Tremco, Inc.; Product TREMStop MP, TREMStop Electrical Box Insert,
 - d. Substitutions: See Section 01-6000 - Product Requirements.
 - J. Reusable Firestopping: Removable intumescent compressible shapes, pillows, or blocks specifically tested in removable configuration;
 - 1. Manufacturers:
 - a. Hilti, Inc; Product FS657 Fire Block, CP 675T Firestop Board, CP 658T Firestop Plug: www.us.hilti.com.
 - b. 3M Fire Protection Products; Product Fire Barrier Pass-Through Products: www.3m.com/firestop.
 - c. Tremco, Inc; Product TREMStop QuickComm, TREMStop PS, Fyre-Can Sleeve
 - d. Substitutions: See Section 01-6000 - Product Requirements.
 - K. Trowelable Firestopping for complex penetrations:
 - 1. Manufacturers"
 - a. 3M Fire Protection Products; Product Fire Barrier Mortar: www.3m.com/firestop.
 - b. Hilti, Inc; Product CP637 Trowelable Firestop Compound, CP 637 Firestop Mortar: www.us.hilti.com.
 - c. Tremco, Inc; Product TREMStop Fire Mortar; www.tremcosealants.com.
 - d. Substitutions: See Section 01-6000 - Product Requirements.
 - L. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.
 - M. Other Materials: As required for a complete and proper installation, compatible with firestopping materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify openings are ready to receive the work of this section.
 - 1. Verify penetrations are properly sized and in suitable condition for application of materials.
 - 2. Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestopping.
 - 3. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Schedule installation of firestopping after completion of penetrating items but prior to covering or concealing of work.

- B. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter that could adversely affect bond of firestopping material.
- C. Remove incompatible materials that could adversely affect bond.
- D. Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.
- E. Install backing materials to arrest liquid material leakage.

3.03 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
 - 1. Seal all holes or voids made by penetrations and all joints to ensure an air and water resistant seal, capable to withstand compression, extension and joint movement.
 - 2. Consult with mechanical engineer, project manager, and damper manufacturer prior to installation of UL firestop systems that might hamper the performance of fire dampers as it pertains to duct work.
 - 3. Protect materials from damage on surfaces subjected to traffic.
 - 4. Tool or trowel exposed surfaces to a neat finish. Remove excess materials promptly as work progresses and at completion.
- B. Curtainwall insulation: Apply insulation directly to the interior surface of the exterior wall with appropriate spindle or prong-type anchors.
 - 1. Fasten anchors to wall by welding the pin to metal and the impale the insulation, or by using pre-attached heads and welding them through the insulation.
 - 2. Impale insulation an anchor and secure with washer. Select pin lengths to ensure a tight fit. Protect pin tips where subject to human contact. Attachment shall be in accordance with UL Design Number.
- C. Do not cover installed firestopping until inspected by authority having jurisdiction.
- D. Coordinate with mechanical engineer and project manager prior to installation of UL firestop systems that might hamper the performance of fire dampers as it pertains to duct work.
- E. Contractor shall be responsible to oversee work of all trades to insure that sleeves or core-drilled holes are the proper size to accommodate through penetrating items.
- F. Office of School Facilities shall inspect firestopping installation at above ceiling inspection.
- G. Install labeling required by code.

3.04 IDENTIFICATION/LABELING (See attached Example)

- A. Identify through-penetration firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. For plastic labels, use self-adhering type with adhesives capable of permanently bonding labels to surfaces on which labels are placed and, in combination with label material, will result in partial destruction of label if removal is attempted. Include the following information on labels:
 - 1. The words "Warning - Through-Penetration Firestop System - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Through-penetration firestop system designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Through-penetration firestop system manufacturer's name.

6. Installer's name.

3.05 CLEANING

- A. Clean adjacent surfaces of firestopping materials.
- B. Remove temporary dams after initial set of firestopping and smoke seal materials.
- C. Remove equipment, materials and debris, leaving area in undamaged, clean condition.

3.06 PROTECTION

- A. Protect adjacent surfaces from damage by material installation.
- B. Patch and repair firestopping damaged by cutting or penetrating of existing firestop systems already installed.

3.07 FIELD QUALITY CONTROL

- A. Keep areas of work accessible until inspection by applicable authorities.
- B. Inspection of through-penetration firestopping shall be performed in accordance with ASTM E 2174 "Standard Practice for On-Site Inspection of Installed Firestops".
- C. Quantity stated in ASTM E2174 or 10% of the installed firestopping (whichever is greater) shall be destructively tested to confirm that the installation is installed in accordance with the contract documents. The Contractor shall be responsible to repair all firestopping that is damaged during testing procedures at no additional cost to the Owner.
- D. If additional testing is required due to unsatisfactory results, then the Contractor shall be responsible for the costs for retesting in compliance with Section 01-4500 - Quality Control.

! WARNING

This opening has been sealed with the following 3M™ Fire Protection Product(s) _____

DO NOT REMOVE!

To maintain UL, Intertek or other third-party classification in retrofitting, reseal with 3M™ Fire Protection Products **ONLY!**

Installer's Name _____

Installation Company _____

Address _____ Phone# _____

System # _____ Hr. Rating _____

Date _____ Job/Ref. # _____

**Warning-Through-penetration Firestop System - Do Not Disturb
Notify Building Management of Any Damage.**

END OF SECTION

1.0 GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 Specification sections, apply to work of this section.

1.02 SCOPE OF WORK

- A. Work includes sealing (caulking) of joints where indicated on drawings, specified herein, and where required for a complete weather tight installation. Typical locations include, but are not necessarily limited to, the following:
 - 1. Exterior and interior perimeter of hollow metal door frames.
 - 2. Exterior and interior perimeter of Aluminum Entrances, Curtain Wall, and Storefront Work.
 - 3. Control and Expansion Joints.
 - 4. Metal Cap Flashings
 - 5. Where one partition or wall abuts another and is not structurally bonded.
- B. Fire Stopping Sealants and Smoke Seals are specified in Section 07 84 00.
- C. Sealants for glass and glazing are specified in Section 08 80 00.

1.03 DEFINITIONS:

- A. Sealant: A weatherproof elastomer used in filling and sealing joints, having properties of adhesion, cohesion, extendibility under tension, compressibility and recovery; shall be designed to make joints air and water tight. Material is designed generally for application to joints at exterior of structures and for other joints subject to movement.
- B. Caulking compound: A material used in filling joints and seams, having properties of adhesion and cohesion; shall not be required to have extensibility and recovery properties, usually applied to joints at interior of structures.
- C. Caulk: The process of filling joints, without regard to type of material.
- D. Joint failure: A caulked joint exhibiting one or more of the following characteristics:
 - 1. Leaks air and/or water
 - 2. Sealant migrates
 - 3. Sealant loses adhesion
 - 4. Sealant loses cohesion
 - 5. Sealant does not cure
 - 6. Sealant discolors
 - 7. Sealant stains adjacent work
 - 8. Sealant develops bubbles, air pockets or voids.

1.04 SUBMITTALS:

- A. Manufacturer's Data: Submit two copies of manufacturer's specifications, recommendations and installation instructions for sealant and associated miscellaneous material required. Include manufacturer's published data, or letter of certification, or certified test laboratory report indicating that material complies with requirements and is

intended generally for applications shown. Show by transmittal that one copy of each recommendation and instruction has been distributed to Installer.

- B. Approval of Applicator: A letter on manufacturer's letterhead signed by an active company administrator certifying that applicator is approved at the time of bidding by manufacturer.
- C. Color Samples:
 - 1. Submit samples of manufacturer's standard and special colors as indicated at least 30 days prior to commencement of application.
 - 2. Samples shall be actual materials or literature depicting actual material colors. Architect reserves the right to reject work not in conformance with selected colors, based upon samples submitted.
 - 3. Should Contractor select a manufacturer meeting specified requirements, except for minimum color range requirements, he shall be responsible for furnishing special colors within range requirements. Special colors shall be submitted for Architect's acceptance.
- D. Warranty: A warranty from the applicator upon completion guaranteeing the water tightness of the sealant installation for a period of five (5) years assuming responsibility for prompt and complete repair of any leaks occurring during this period. In addition, provide a letter on the manufacturer's letterhead at project close-out stating that work has been accomplished in accord with this specification and with manufacturer's application directive.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Comply with manufacturer's instruction regarding environmental conditions under which materials may be stored.

1.06 JOB CONDITIONS:

- A. Weather Conditions
 - 1. Install no materials under adverse weather conditions, or when temperatures are below or above those recommended by the manufacturer.
 - 2. Proceed with work only when forecasted weather conditions are favorable for joint cure and development of high early bond strength.
 - 3. Wherever joint width is affected by ambient temperature variations, install materials only when temperatures are in lower third of manufacturer's recommended installation temperature. Coordinate time schedule with Contractor to avoid delay of project.
- B. Protection of adjacent surfaces:
 - 1. Protect by applying masking materials or manipulating application equipment to keep materials in joint. If masking materials are used, allow no tape to touch cleaned surfaces to receive sealant. Remove tape immediately after caulking, before surface skin begins to form.
 - 2. Remove misapplied sealants from surfaces using solvents and methods recommended by manufacturer.
 - 3. Restore surfaces from which sealants have been removed to original condition and appearance.

1.07 SERVICES OF MANUFACTURER'S REPRESENTATIVE

- A. Manufacturer of sealant materials shall provide the services of a factory representative who shall conduct on site check of caulking work to determine compliance with manufacturer's application directive.

1.08 APPLICATORS

- A. Subcontract the caulking and sealing work to a firm experienced in the application of the types of materials required, employing skilled tradesmen for the work and who are approved by the manufacturer of the materials.

2.0 PRODUCTS

2.01 MATERIALS

- A. Sealant for Exterior Work: Provide two-component Polyurethane-based elastomeric sealant complying with FS TT-S-00227E, Type II (Non-Sag), Class A, and ANSI A116.1.

These materials shall be of sufficient strength and hardness to withstand stiletto heel traffic without damage or deterioration of sealer system.

DYNATROL II	by Pecora Corporation
SONOLASTIC NP II	by Sonneborn-Contech
DYMERIC II	by Tremco

- B. Caulking for Interior Work: Provide one-part acrylic latex polymer non-sag Caulking Compound complying with ASTM C834.

Products complying with requirements include, but not necessarily limited to:

AC-20	by Pecora Corporation
ACRYLIC LATEX	by Tremco
SONOLAC	by Sonneborn-Contech

- C. Sealant for Interior Horizontal Joints subject to Foot Traffic: Provide two part, cold-applied, chemically-curing, horizontal grade, elastomeric polyurethane Joint Sealant, complying with ASTM D 1850 and FS TT-S-00227E (3), Class A, Type 1.

Products complying with requirements include, but not necessarily limited to:

UREXPAN NR-200	by Pecora Corporation
THC-900	by Tremco
SONOLASTIC	by Sonneborn-Contech

2.03 COLORS:

- A. As selected by Architect from manufacturer's standard selection.
- B. Colors of caulk are multicolor and shall match masonry, windows, metal roof and other separate finishes as selected by the architect.

2.04 COMPATIBILITY:

- A. Before purchase of the specified sealant, investigate its compatibility with the joint surfaces, joint fillers and other materials behind or below the joint in the construction. Provide only materials (manufacturer's recommended variation of the specified materials) which are known to be fully compatible with the actual installation conditions, as shown by the manufacture's published data or certification.

2.05 ACCESSORY MATERIALS:

- A. Joint Cleaner: Type recommended by sealant manufacturer for substrates indicated.
- B. Joint Primer/Sealer: Provide type of joint primer/sealer recommended by sealant manufacturer for joint surfaces to be primed or sealed.
- C. Bond Breaker Tape (BB-Tp): Polyethylene tape or other plastic tape as recommended by sealant manufacturer to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self adhesive tape where applicable.
- D. Sealant Backer Rod: Compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam as recommended by sealant mfg. for compatibility with sealant material. Provide size and shape of rod to control joint depth, break bond at bottom of joint, form optimum shape of bead on back size to minimize possibility of extrusion when joint is compressed.
- E. Tooling agent: Agent recommended by sealant manufacturer to insure contact of material with inner joint faces.
- F. Divider strips: Synthetic rubber or closed cell synthetic foam not less than 1/6" thick and full depth of sealant; approved by manufacturers of dissimilar materials as being compatible with each other.

3.0 EXECUTION

3.01 JOB MOCKUP:

- A. Prepare, caulk and finish one sample of each joint condition.
- B. Sample joints shall be accepted by Architect prior to beginning work. Retain approved samples as a standard for work.
- C. Only neat tooled joints will be accepted.

3.02 JOINT SURFACE PREPARATION

- A. Installer must examine joint surfaces, backing and anchorage of units forming sealant rabbet and conditions under which sealant work is to be performed and notify Contractor in writing of any conditions detrimental to proper and timely completion of work. Do not proceed with sealant work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.
- B. Clean joint surfaces immediately before caulking joints. Remove dirt, insecure coatings, moisture and other substances which could interfere with bond
- C. Etch concrete and masonry joint surfaces to remove excess alkalinity, unless sealant manufacturer's product data indicates that alkalinity does not interfere with bond and

performance. Etch with 5% solution of muriatic acid; neutralize with dilute ammonia solution; rinse with clean water and allow to dry before caulking.

- D. Roughen joint surfaces on vitreous coated and similar non-porous materials, unless sealant manufacturer's product data indicates equal bond strength as porous surfaces. Rub with fine abrasive cloth or wool to produce dull sheen.

3.03 APPLICATION

- A. Comply with Sealant Manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.
- B. Prime or Seal joint surfaces where recommended by sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.
- C. Install Sealant Backer Rod for all caulking materials, except where recommended to be omitted by sealant mfg. for application indicated.
- D. Employ installation techniques which will ensure that sealants are deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joints to form a slight cove, so that joint will not trap moisture and dirt. Tool sealant as recommended by sealant manufacturer.
- E. Do not allow materials to overflow or spill onto adjoining surfaces. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces.
- F. Remove excess and misplaced materials as work progresses. Clean adjoining surfaces to eliminate evidence of misplaced materials, without damage to adjacent surfaces or finishes.
- G. Cure Sealants in compliance with manufacturer's product data to obtain high early bond strength, internal cohesive strength and surface durability.
- H. Install sealants to depths as shown, or, if not shown, as recommended by the sealant manufacturer.
- I. Installer shall advise contractor of procedures required for protection of sealants and caulking compounds during construction period, so that they will be without deterioration or damage (other than normal weathering) at time of Owner's acceptance.

END OF SECTION 07 9000

1.0 GENERAL:

1.1 RELATED DOCUMENTS: Drawings and general provisions of Contract, including Divisions 0 (Bidding and Contract Documents), and 1 (General Requirements) apply to work specified in this section.

1.2 SCOPE: This section covers interior hollow metal work, complete. The extent of hollow metal work is shown on drawings and in schedules.

1.3 QUALITY ASSURANCE: Provide custom hollow metal work manufactured by a single firm specializing in the production of this type of work. Manufacturers offering products to comply with requirements of this specification include the following:

Amweld
Curries
Republic
Ceco

1.4 APPLICABLE STANDARDS: Hollow metal doors and frames shall be as manufactured by a member of the Steel Door Institute in accordance with the Institute's "Recommended Standard Steel Doors and Frame Details" (S.D.I. 111).

1.5 FIRE-RATED ASSEMBLIES: Wherever a fire-resistance classification is shown or scheduled for hollow metal work, provide fire-rated hollow metal doors and frames investigated and tested as a fire door assembly, complete with type of fire door hardware to be used. Identify each fire door and frame with UL labels, indicating applicable fire rating of both door and frame.

A. Standard: Construction of assemblies to comply with NFPA Standard No. 80 and as herein specified.

B. Temperature Rise Rating: At stairwell enclosures, provide doors which have a Temperature Rise Rating of not more than 450 degrees F. maximum on the unexposed side to 30 minutes of standard fire test exposure.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING: Deliver hollow metal work cartoned or crated to provide protection during transit and job storage. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided the finish items are equal in all respects to new work and are acceptable to the Architect; otherwise, remove and replace damaged items as directed. Store hollow metal units on raised platforms in vertical positions with blocking between units to allow air circulation. Keep stored material covered and protected from damage.

1.7 JOB CONDITIONS: The Installer must examine the substrate and conditions under which hollow metal work is to be installed and notify the Contractor in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

1.8 SUBMITTALS:

A. Manufacturer's Data: For information only, submit two copies of manufacturer's specifications for fabrication and shop painting and installation instructions.

B. Shop Drawings: Submit shop drawings for the fabrication and erection of custom hollow metal doors and frames. Include details of each frame type, thickness of metal, elevations of door design types, conditions at openings, details of construction, location

and installation requirements of finish hardware and reinforcements and details of joints, fastenings, anchors and connections.

2.0 PRODUCTS:

2.1 BASIC MATERIALS:

- A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A569 and ASTM A568.
- B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, Type E, matte finish, complying with ASTM A366 and ASTM A568. Provide stretcher-leveled standard of flatness for facing sheets of doors.
- C. Metallic Coated Steel Sheets: Commercial Steel (CS), Type B; with minimum **A60 (ZF180)** metallic coating, complying with ASTM A653/A 653M,
- D. Supports and Anchors: Provide units fabricated of not less than 16 gauge sheet steel. Galvanize after fabrication where units will be built into exterior walls, complying with ASTM A153, Class B.
- E. Inserts, Bolts and Fasteners: Provide manufacturer's standard units, except hot-dip galvanize all items to be built into exterior walls, complying with ASTM A153.
- F. Shop-Applied Paint: Provide a rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints, complying with FS TT-P-57 (Type II), TT-P-636, or TT-P-664. Paint galvanized surfaces with a zinc dust-zinc oxide primer complying with FS TT-P-641, Type II.

2.2 FABRICATION, GENERAL: Fabricate hollow metal units to be rigid, neat in appearance and free from defects, warp or buckle. Accurately form metal to required sizes and profiles. Wherever practicable, fit and assemble units in the manufacturer's plant. Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at the project site. Weld exposed joints continuously, grind, dress and make smooth, flush and invisible. Metallic filler to conceal manufacturing defects is not acceptable.

- A. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips or Jackson heads for exposed screws and bolts.
- B. Clearance: Single swing doors shall have not more than a 1/8" clearance at jambs and heads, 1/8" clearance at meeting edges of pairs of doors, and 3/8" clearance at bottom. All dimensions are nominal and subject to recognized manufacturer's tolerance. The lock edges of doors shall be so designed as to provide proper operating clearance. Special bottom clearance shall be provided where thresholds require it.
 - 1. Fire rated doors shall have clearances as specified in NFPA Standard No. 80.
- C. Finish Hardware Preparation: Prepare hollow metal units to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling and tapping in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 "Specifications for Door and Frame Preparation".
 - 1. Reinforce hollow metal Units to receive surface applied hardware. Drilling and tapping for surface applied finish hardware may be done at project site.

2. Locate finish hardware as shown on final shop drawings, or if not shown, in accordance with "Recommended Location for Building Hardware", published by the National Builders' Hardware Association.
 3. Fire-rated openings shall have been prepared for hardware in a manner that will not compromise the required fire rating.
- D. Shop Painting:
1. Clean, treat and paint all surfaces of fabricated hollow metal units, including galvanized surfaces, whether concealed or exposed in the finished work.
 2. Clean steel surfaces of all mill scale, rust, oil, grease, dirt and other foreign materials before the application of the shop coat of paint. Remove mill scale and rust by hand tool methods complying with SSPC-SP 2 and solvent clean all metal complying with SSPC-SP 1.
 3. Apply pretreatment to cleaned metal surfaces, using cold phosphate solution (SSPC-PT 2), hot phosphate solution (SSPC-PT 4) or basic zinc chromate-vinyl butyral solution (SSPC-PT 3).
 4. Apply shop coat of prime paint within the time limits recommended by the pretreatment manufacturer. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 2.0 mils.
- 2.3 FRAMES: Provide hollow metal frames for doors, transoms, side-lights, view window, borrowed lights and other openings, in sizes and profiles as indicated.
- A. General: Pressed steel frames for doors, where indicated, shall be combination buck, frame and trim type. Frames shall be welded type with mitered head and jamb members. Corners shall be reinforced and have continuous welds. Exposed welds shall be filled and ground smooth to a level surface without dishing.
- B. Frame Sheet Steel Thickness: The thickness of sheet metal used in constructing or fabricating frames shall be 14 gauge for single interior rated and non-rated frames and 12 gauge for all pairs of doors interior. Fabricate frames concealed stiffeners, reinforcement, edge channels louvers and moldings from either cold-rolled or hot-rolled steel at fabricator's option.
- C. Mullions and Transom Bars: Provide closed or tubular mullions and transom bars where indicated. Fasten mullions and transom bars at crossing and to jambs by butt welding. Reinforce joints between frame members with concealed clip angles or sleeves same metal and thickness as frame. Where installed in masonry, leave vertical mullions in frames open at the top so they can be filled with grout.
1. For fire-rated openings, do not provide a mullion or astragal at the meeting edges of a pair of doors for openings rated up to 90 minutes. See Section 08 21 00 - "Wood Doors" for edge treatment of pairs of wood doors.
- D. Wall Anchors: Furnish wall anchors as required to secure frames to adjacent construction, formed of not less than 18 gauge galvanized steel.
1. Masonry Construction: Adjustable, flat or corrugated or perforated, T-shaped to suit frame size with leg not less than 2" wide by 10" long. Furnish at least three anchors per jamb.

2. Metal Stud Partitions: Insert type with notched clip to engage metal stud, welded to back of frame. Provide at least three anchors for each jamb for frames.
- E. Floor Anchors: Provide floor anchors for each jamb and mullion which extends to floor, formed of not less than 16 gauge galvanized steel sheet, as follows:
 1. Monolithic Concrete Slabs: Clip type anchors, with two holes to receive fasteners, welded to bottom of jambs and mullions.
- F. Structural Reinforcing Members: Provide structural reinforcing members as part of frame assembly, where indicated at mullions, transoms, or other locations which are to be built into frame.
- G. Head Reinforcing: For frames over 4'-0" wide, provide two continuous steel angles not less than 2" x 2" x 12 gauge and width of opening, welded to back of frame at head, unless otherwise shown. Head reinforcing at all door frames shall be continuous for the length of the head.
- H. Hinge Reinforcing: 7 gauge for hinges on frames.
- I. Spreader Bars: Provide two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- J. Rubber Door Silencers: Drill stops to receive three silencers on single-door frames and four silencers on double-door frames. Install plastic plugs to keep holes clear during construction.
- K. Plaster Guards: Provide 26 gage steel plaster guards or mortar boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

2.4 DOORS:

- A. Interior Doors: SDI-100, Grade II, heavy-duty, Model 2, minimum 18 gauge faces.
- B. Fabricate exposed faces of doors and panels, including stiles and rails of non-flush units, only cold-rolled steel.
- C. "A" Label fire doors shall have minimum 16 gauge face plates.
 1. Door faces shall receive paint except as listed below.
- D. Door reinforcement shall be a minimum of 12 gauge for hinges and be continuous channel for the full height of the door, 12 gauge for closers and be a continuous channel for the full length of the header and 14 gauge for strikes and be a continuous channel for the full height of the door. . Fabricate exposed faces of doors and panels, including stiles and rails of non-flush units, only cold-rolled steel.
- E. Door Louvers: Provide sightproof stationary louvers for interior doors where indicated, constructed of inverted V-shaped or Y-shaped blades formed of 24 gauge cold-rolled steel set into 20-gauge steel frame.

- 2.5 FIRE DOORS AND RELATED FRAMES: When required for either insurance rating purposes or for compliance to building codes (see Drawings), the fire door and frame assembly shall be of a type investigated and successfully fire tested in accordance with the ASTM designation E-152-41 or later revision. The assembly shall be identified by labels (or an identification marking) of the

approving agency. The label on the door shall indicate the applicable fire test rating for the door construction furnished. Approved agencies shall include the Underwriters' Laboratories, Inc., the Underwriters' Laboratories of Canada, The Factory Mutual Laboratories, and other authorities having local or regional jurisdiction.

- 2.6 **STOPS AND MOLDINGS:** Provide stops and moldings around glazed panels in doors and frames where indicated.
- A. Form fixed stops and moldings integral with frame, unless otherwise acceptable to Architect. Provide fixed stops on inside of hollow metal units exposed to exterior and on corridor side of interior units, unless otherwise indicated.
 - B. Provide removable stops and molds at other locations, formed of not less than 20 gauge steel sheets; exterior, galvanized and interior cold-rolled. Secure with machine screws spaced uniformly not more than 12" o.c. Form corners with butted hair-line joints. Coordinate width of rabbet between fixed and removable stops with type of glass or panel and type of installation indicated.
- 3.0 **EXECUTION:**
- 3.1 **GENERAL:** Install hollow metal units and accessories in accordance with the final shop drawings and manufacturer's data and as herein specified.
- 3.2 **SETTING MASONRY ANCHORAGE DEVICES:** Provide masonry anchorage devices where required for securing hollow metal frames to in-place concrete or masonry construction. Set anchorage devices opposite each anchor location, in accordance with details on final shop drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.
- 3.3 **PLACING FRAMES:** Set frames accurately in position, plumbed, aligned and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged. Comply with provisions of SDI-105 "Recommended Erection Instructions for Steel Frames" unless otherwise indicated.
- A. In masonry construction, building-in of anchors and grouting of frames shall be performed as wall is laid up. Mortar may be used to grout frames only.
 - B. Place fire-rated frames in accordance with NFPA Standard No. 80.
- 3.4 **DOOR INSTALLATION:** Fit hollow metal doors, except fire-rated doors, accurately in their respective frames, with clearances specified in SDI-100. Place fire-rated doors with clearances as specified NFPA Standard No. 80. Doors shall be installed plumb and in true alignment in a prepared opening and be fastened to achieve the maximum operational effectiveness and appearance of the unit.
- 3.5 **HARDWARE:** Hardware shall be field applied.
- 3.6 **ADJUST AND CLEAN:**
- A. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
 - B. Protection Removal: Immediately prior to final inspection, remove protective plastic wrappings from prefinished doors.

- 3.7 FINAL ADJUSTMENTS: Check and readjust all operating finish hardware items in hollow metal work just prior to final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including doors or frames which are warped, bowed or otherwise damaged.

END OF SECTION 08 11 00

1.0 GENERAL

1.1 SCOPE:

- A. See Section 01 21 00 Allowances for materials, installation and SC Sales Tax associated with this section.
- B. Furnish complete finish hardware except as mentioned hereinafter as being provided by others.

1.2 DETAILS

- A. Coordinate hardware for related trades such as metal doors, frames, millwork, etc.
- B. Immediately after receipt of the finish hardware purchase order, coordinate approved shop drawings from any affected trades.
- C. Hardware shall be delivered to the job site in the manufacturer's original packages. Each item shall be clearly marked with the opening number to identify proper locations.
- D. Contractor to provide a suitable storage space for hardware upon delivery to the job site. Store and handle to prevent damage or loss.

1.3 QUALIFICATIONS:

- A. As a mandatory requirement, all hardware shall be furnished by an established hardware firm who maintains and operates an office, display and stock. The firm shall be a regular authorized distributor of the locks, and related hardware that it proposes to furnish.
- B. All hardware for this project shall be scheduled and furnished by or under the direct supervision of a regular member of the American Society of Architectural Hardware Consultants who is also a full time of the firm. Factory representatives or other persons working with but not for, as a regular employee of the Hardware Supplier will not be considered all schedules submitted to the architect for approved and job use shall carry the signature of the consultant. The Hardware Consultant shall make periodical visits to the jobsite while Hardware is being installed & on completion of project, he shall inspect the hardware for correct operation and installation of same and notify the architect in writing that this inspection has been made.

1.4 SUBMITTALS:

- A. Prepare and submit the complete detailed hardware schedule in accordance with Section - "Shop Drawings, Project Data & Samples".
- B. Schedule and detail each floor separately. On doors of different sizes or where hardware such as hinges, closers and locks is different a separate heading shall be used. No "A" label openings shall be combined with other label classifications.
- C. If requested, supply a sample of each hardware item as required, to be retained by architect for comparison with hardware furnished. Any deviation from hardware scheduled shall be replaced with the proper hardware. Samples will be returned in time for installation on the project. Tag for opening identification.
- D. Templates or template information shall be sent to each manufacturer who requires such information. (Example: Custom hollow metal door and frame

manufacturers, etc.) An approved hardware schedule shall be sent to each manufacturer who required template information.

1.5 PRODUCT HANDLING:

- A. Hardware shall be ordered so that it will be available on time for job requirements.
- B. Locked storage space complete with shelving, for unpacking crates and sorting out hardware shall be furnished.
- C. If doors are field painted or finished, hardware shall be protected.

2.0 PRODUCTS:

2.1 MATERIALS:

- A. Items listed herein are taken from the following manufacturer's catalogs:
- B. Items listed as allowable substitutions are approved. Any substitutions of hardware manufacturer's other than those listed in this specification must be approved in writing by the architect ten (10) days prior to bid date. Samples must be submitted upon request of the Architect.
- C. Finishes of items of hardware shall be as selected by the Owner.
- D. Hinges - shall be Hager Stanley or McKinney
- E. Locks and Latches shall be mortise by Corbin Russwin
- F. Exit Devices shall be Von Duprin 99 series.
- G. Door Closers shall be Sargent 351 series
- H. Mop, Kick and Armor Plates – shall be by Rockwood, Hager or Ives.
- I. Door Pulls – shall be by Rockwood, Hager or Ives.
- J. Door stops shall be by Rockwood, Hager or Ives.
- K. Silencers shall be GJ64. Provide 3 silencers for single doors and two (2) silencers for pairs of doors.
- L. Thresholds shall be Pemko, Hager or National Guard Products.
- M. Fasteners. All items of hardware shall be supplied with correct fasteners such as wood
- N. Keys, Keying
 - 1. All locksets shall be furnished with two (2) cut keys with key code number stamped on bow of key. All cylinders shall be master keyed to existing keyed master systems. Furnish four (4) master keys for each master keyed group. This system is Sargent RB keyway per owner. Winning bidder to verify.
 - 2. Consult with the Architect & Owner & secure written approval of the complete keying layout prior to placing lock order with factory.

3. The master keys shall be sent direct to the Owner's Representative by registered mail, return receipt requested.

- O. Codes: The hardware supplier shall be responsible for supplying the correct hardware to meet all local and state building fire and handicapped codes.

3.0 EXECUTION:

3.1 HARDWARE LOCATION:

- A. A schedule of mounting heights for all items of hardware shall be included in hardware schedule for approval.
- B. Degree of opening for doors with overhead holder, closers, etc., shall be included in hardware schedule for Architect's approval.

3.2 INSTALLATION:

- A. All hardware shall be installed by Manufacturers Certified Installers skilled in the application of institutional grade hardware.
- B. After installation, representative templates, instruction sheets, and installation detail, shall be placed in a file folder to be turned over to Owner when building is accepted. Include at least two (2) each of special adjusting tools furnished with hardware.
- C. After the building is occupied, arrange an appointment with the Owner's designated representative to instruct this person in the proper use, servicing, adjusting & maintenance of hardware.
- D. Special Emphasis will be placed on the care of and the installation on the Finished Hardware:
 1. Install hinges on doors for which they are scheduled and marked.
 2. Install locks on doors for which they are scheduled and marked.
 3. Do not remove labels on locks or cylinders; this label has valuable keying references.
 4. If door stop scheduled for an opening is not appropriate due to furniture layout or other reasons, then advise the hardware supplier before proceeding for possible replacement.
 5. Closers are to be provided with Sex Nuts and Bolts.
 6. All lock strikes are to be 4 7/8" unless so noted.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Metal channel ceiling framing.
- D. Acoustic insulation.
- E. Gypsum sheathing.
- F. Glass-Mat Faced Backing Board.
- G. Gypsum wallboard.
- H. Joint treatment and accessories.
- I. Water-resistive barrier over exterior wall sheathing.

1.02 RELATED REQUIREMENTS:

- A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.
- B. Section 07 90 00 - Joint Sealers:
- C. Section 09 51 00 - Acoustical Ceilings: Gypsum board soffits at acoustical ceilings.

1.03 REFERENCE STANDARDS:

- A. ANSI A108.11 - American National Standard for Interior Installation of Cementitious Backer Units; 1999 (R2005).
- B. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (R2005).
- C. ASTM C 475/C 475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).
- D. ASTM C 645 - Standard Specification for Nonstructural Steel Framing Members; 2009a.
- E. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2009a.
- F. ASTM C 840 - Standard Specification for Application and Finishing of Gypsum Board; 2008.
- G. ASTM C 954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2007.
- H. ASTM C 1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.
- I. ASTM C 1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2009.
- J. ASTM C 1177/C 1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2008.
- K. ASTM C 1280 - Standard Specification for Application of Gypsum Sheathing; 2009.
- L. ASTM C 1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement

Substrate Sheets; 2008b.

- M. ASTM C 1396/C 1396M - Standard Specification for Gypsum Board; 2009a.
- N. ASTM D 3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2000 (Reapproved 2005).
- O. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction; 2005.
- P. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.
- Q. ASTM E 413 - Classification for Rating Sound Insulation; 2004.
- R. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2007.
- S. GA-226 - Application of Gypsum Board to Form Curved Surfaces; Gypsum Association; 2008.
- T. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS:

- A. See Section 01-3300 - Submittal Procedures, for submittal procedures.
- B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.
- C. Test Reports: For all stud framing products that do not comply with ASTM C 645 or C 754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.05 ENVIRONMENTAL REQUIREMENTS:

- A. Do not install joint treatment compounds unless installation areas comply with the temperature and ventilation requirements recommended by the drywall manufacturer.

1.06 QUALITY ASSURANCE:

- A. Installer Qualifications: Company specializing in performing gypsum board application and finishing, with minimum 5 years of documented experience.

1.07 DELIVERY AND STORAGE OF MATERIALS:

- A. Coordinate delivery with construction schedule to minimize storage periods at the project site. Deliver in manufacturer's unopened bundles or packages, fully identified with manufacturer's name, brand, type and grade. Protect from weather, soiling and damage using handling equipment and storage techniques recommended by manufacturer.
- B. ALL GYPSUM WALLBOARD AND INSULATION SHALL BE KEPT DRY. ANY WALLBOARD OR INSULATION THAT GETS WET IN STORAGE OR AFTER INSTALLATION SHALL BE REMOVED AND REPLACED. ALL PRODUCTS SHOWING EVIDENCE OF MOLD GROWTH SHALL BE DISCARDED.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS:

- A. Low-Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.02 GYPSUM BOARD ASSEMBLIES:

- A. Recycled Content of Gypsum Panel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 20 percent.
- B. Provide completed assemblies complying with ASTM C 840 and GA-216.
- C. Interior Partitions at all interior metal stud walls: Provide completed assemblies with the following characteristics:
 - 1. Acoustic Attenuation: STC of 45-49 or higher when indicated, calculated in accordance with ASTM E 413, based on tests conducted in accordance with ASTM E 90.
- D. Fire Rated Assemblies: Provide completed assemblies in compliance with tested assembly.
 - 1. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL Fire Resistance Directory.

2.03 METAL FRAMING MATERIALS:

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Non-Loadbearing Framing System Components: ASTM C 645; galvanized sheet steel, of size and properties necessary to comply with ASTM C 754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
 - 1. Exception: The minimum metal thickness and section properties requirements of ASTM C 645 are waived provided steel of 40 ksi minimum yield strength is used, the metal is continuously dimpled, the effective thickness is at least twice the base metal thickness, and maximum stud heights are determined by testing in accordance with ASTM E 72 using assemblies specified by ASTM C 754.
 - 2. Studs: "C" shaped with flat or formed webs, 20 gauge.
 - 3. Runners: U shaped, sized to match studs.
 - 4. Ceiling Channels: C shaped, 16 gauge.
 - 5. Resilient Furring Channels: 1/2-inch- (13-mm-) deep members designed to reduce sound transmission. Shape to achieve STC assembly indicated.
- C. Ceiling Hangers: Type and size as specified in ASTM C 754 for spacing required.
- D. Partition Head to Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short.
- E. Gypsum Drywall Suspension System: USG Suspension System for flat gypsum panel ceilings. Pre-engineered, ASTM C645, G40 (G90 severe environmental conditions) hot-dipped galvanized system meeting all seismic and sound requirements of this project. Installation must be in compliance with IBC and ICC-ESR-1222

2.04 BOARD MATERIALS:

- A. Manufacturers - Gypsum-Based Board:
 - 1. American Gypsum: www.americangypsum.com.
 - 2. CertainTeed Corporation: www.certainteed.com.
 - 3. Georgia-Pacific Gypsum LLC: www.gp.com/gypsum.
 - 4. National Gypsum Company: www.nationalgypsum.com.
 - 5. Temple-Inland Inc: www.templeinland.com.
 - 6. USG Corporation: www.usg.com.
 - 7. Substitutions: See Section 01-6000 - Product Requirements.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C 1396/C 1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 - 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D 3273.

- a. Mold-resistant board is required at all locations.
- 3. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
- 4. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
 - b. Ceilings: 5/8 inch.
- C. Abuse-Resistant Wallboard: Shall be 5/8" Fiber Rock brand VH1 panels by USG. Comply with ASTM E-119, ASTM E-84 and ASTM D4977.
 - 1. For all exposed drywall wall surfaces below 8 feet above the finished floor (except for administration areas not exposed to students or public use), provide abusive resistant gypsum wallboard with paper-face surface suitable for receiving decorator finish and with long edges tapered or radial eased to receive manufacturer's standard joint.
- D. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.
 - 1. Core: 5/8 inch (15.9 mm), Type X.
 - 2. Long Edges: Tapered.
 - 3. Mold Resistance: ASTM D 3273, score of 10.
- E. Ceiling Board: Special sag-resistant gypsum ceiling board as defined in ASTM C 1396/C 1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Ceilings, unless otherwise indicated.
 - 2. Thickness: 5/8 inch.
 - 3. Edges: Tapered.
- F. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
 - 1. Application: Exterior sheathing, unless otherwise indicated.
 - 2. Glass-Mat-Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C 1177/C 1177M.
 - 3. Unfaced Sheathing: Water-resistant exterior fiber-reinforced gypsum sheathing panels as defined in ASTM C 1278/C 1278M, and exceeding the relevant requirements of ASTM C 1177/C 1177M.
 - 4. Core Type: Regular.
 - 5. Regular Board Thickness: 5/8 inch.
 - 6. Edges: Square, for vertical application.
 - 7. Glass-Mat-Faced Products:
 - a. CertainTeed Corporation; GlasRoc Brand.
 - b. Georgia-Pacific Gypsum LLC; DensGlass Gold Sheathing.
 - c. National Gypsum Company; Gold Bond Brand e2XP Extended Exposure Sheathing.
 - d. Temple-Inland Inc; GreenGlass Exterior Sheathing.
 - e. Substitutions: See Section 01-6000 - Product Requirements.
 - 8. Unfaced Products:
 - a. USG Fiberock Brand Aqua-Tough Sheathing Panels.

2.05 ACCESSORIES:

- A. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
 - 1. Laminating adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool. See section 07 2100 "Thermal Insulation" for additional acoustical insulation products and information.

- C. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 1. Acoustical sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
 - 2. Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.
- D. Finishing Accessories: ASTM C 1047, galvanized steel or rolled zinc, unless otherwise indicated.
 - 1. Types: As detailed or required for finished appearance.
 - 2. Special Shapes: In addition to conventional cornerbead and control joints, provide U-bead at exposed panel edges.
- E. Joint Materials: ASTM C 475 and as recommended by gypsum board manufacturer for project conditions.
 - 1. Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
 - 2. Ready-mixed vinyl-based joint compound.
 - 3. Chemical hardening type compound.
- F. Screws for Attachment to Steel Members Less Than 0.03 inch In Thickness, to Wood Members, and to Gypsum Board: ASTM C 1002; self-piercing tapping type; cadmium-plated for exterior locations.
- G. Screws for Attachment to Steel Members From 0.033 to 0.112 Inch in Thickness: ASTM C 954; steel drill screws for application of gypsum board to loadbearing steel studs.
- H. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.01 EXAMINATION:

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION:

- A. Metal Framing: Install in accordance with ASTM C 754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members at 16 inches on center unless other noted.
 - 1. Level ceiling system to a tolerance of 1/1200.
 - 2. Laterally brace entire suspension system.
- C. Studs: Space studs as indicated.
 - 1. Extend partition framing to structure where indicated and to ceiling in other locations.
 - 2. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.
- D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- E. Blocking: Install mechanically fastened steel channel blocking for support of:
 - 1. Wall mounted cabinets.

2. Plumbing fixtures.
3. Toilet partitions.
4. Toilet accessories.
5. Wall mounted door hardware.
6. Markerboards
7. Other wall-mounted fixtures and equipment

3.03 ACOUSTIC ACCESSORIES INSTALLATION:

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
 1. Batts may be friction-fit in place unless insulation does not fill the cavity depth, then supplementary support must be provided to hold product in place.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
 1. Place one bead continuously on substrate before installation of perimeter framing members.
 2. Place continuous bead at perimeter of each layer of gypsum board.
 3. In non-fire-rated construction, seal around all penetrations by conduit, pipe, ducts, and rough-in boxes.

3.04 BOARD INSTALLATION:

- A. Comply with ASTM C 840. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- D. Exterior Sheathing: Comply with ASTM C 1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
 1. Tape-seal joints immediately after installation in accordance with manufacturer's recommendations. Use fiberglass joint tape provided by same manufacturer as sheathing.
- E. Glass-Mat Faced Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions. Use glass-mat faced backing board as substrate behind ceramic wall tile at metal stud wall conditions unless otherwise noted.
- F. Installation on Metal Framing: Use screws for attachment of all gypsum board.
- G. Curved Surfaces: Apply gypsum board to curved substrates in accordance with GA-226.
- H. Moisture Protection: Treat cut edges and holes in moisture resistant gypsum board with sealant.

3.05 ISOLATION OF DRYWALL FROM OTHER CONSTRUCTION:

- A. Provide Perimeter Relief where non-load-bearing drywall partitions abut structural decks or ceilings or vertical structural elements. Allow not less than 1/4", nor more than 1/2" gap between gypsum drywall and structure. Finish edges of drywall face layer with square-nose metal casing bead and caulk space between casing bead and structure with continuous sealant bead. Attach drywall to studs not less than 1/2" below bottom edge of ceiling track flanges and to first stud adjacent to vertical tracks. Do not attach drywall directly to tracks.
- B. Where Drywall Partitions Intersect Masonry Walls, provide control joint not less than 1/4", nor more than 3/8" wide between gypsum wallboard and masonry. Finish the exposed edges of gypsum board with square nose metal casing bead and caulk space between casing bead and masonry with continuous sealant bead. Caulking of the joint will be at the architects discretion

depending on craftsmanship of the condition. It is preferred that the joint not be caulked

3.06 INSTALLATION OF TRIM AND ACCESSORIES:

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
 - 1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
 - 2. At exterior soffits, not more than 30 feet apart in both directions.
 - 3. Where ceilings and soffits are greater than 30' runs and do not exceed 12' in width.
 - 4. Where ceilings or wall areas exceed 300 sq. ft.
 - 5. At the strike side of doors extending from the top of door frame to 8" above ceiling.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.07 JOINT TREATMENT:

- A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, bedded and finished with chemical hardening type joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C 840, as follows:
 - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - 2. Level 2: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
- D. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

As a minimum, Level 4 finishing shall be required for this project where GWB is exposed to view. In areas not exposed to view, provide as a minimum Level 2 finishing procedures.

3.08 TOLERANCES:

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes gypsum board shaft wall assemblies.

1.2 ACTION SUBMITTALS

- A. Product Data: For each component of gypsum board shaft wall assembly.
- B. Submittals:
 - 1. Product Data: For recycled content, indicating postconsumer and pre-consumer recycled content and cost.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: Provide materials and construction identical to those of assemblies tested according to ASTM E 90 and classified according to ASTM E 413 by a testing and inspecting agency.
- C. Sustainable Design Submittals; Non-structural Metal Framing:
 - 1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
- D. Sustainable Design Submittals; Gypsum Board:
 - 1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
 - 2. Product Data: For adhesives and sealants, indicating VOC content.
 - 3. Laboratory Test Reports: For adhesives and sealants, indicating compliance with requirements for low-emitting materials.

2.2 GYPSUM BOARD SHAFT WALL ASSEMBLIES

- A. Fire-Resistance Rating: As indicated.
- B. STC Rating: 51, minimum.
- C. Gypsum Shaftliner Board:
 - 1. Type X: ASTM C 1396/C 1396M; manufacturer's proprietary fire-resistive liner panels with paper faces, 1 inch (25.4 mm) thick, with double beveled long edges.
- D. Non-Load-Bearing Steel Framing, General: Complying with ASTM C 645 requirements for metal unless otherwise indicated and complying with requirements for fire-resistance-rated assembly indicated.
- E. Studs: Manufacturer's standard profile for repetitive, corner, and end members as follows:

1. Depth: As indicated on drawings.
 2. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm), 20 gauge.
- F. Runner Tracks: Manufacturer's standard J-profile track with manufacturer's standard long-leg length, but at least 2 inches (51 mm) long and matching studs in depth.
1. Minimum Base-Metal Thickness: Matching steel studs.
- G. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- H. Finish Panels: Gypsum board as specified in Section 09 2116 "Gypsum Board Assemblies."
- I. Sound Attenuation Blankets: As specified in Section 09 2116 "Gypsum Board Assemblies."

2.3 AUXILIARY MATERIALS

- A. Trim Accessories: Cornerbead, edge trim, and control joints of material and shapes as specified in Section 09 2116 "Gypsum Board Assemblies" that comply with gypsum board shaft wall assembly manufacturer's written instructions for application indicated.
- B. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.
- C. Track Fasteners: Power-driven fasteners of size and material required to withstand loading conditions imposed on shaft wall assemblies without exceeding allowable design stress of track, fasteners, or structural substrates in which anchors are embedded.
- D. Reinforcing: Galvanized-steel reinforcing strips with 0.033-inch (0.84-mm) minimum thickness of base metal (uncoated).
- E. Acoustical Sealant: Section 07 9005 "Joint Sealants."

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install gypsum board shaft wall assemblies to comply with requirements of fire-resistance-rated assemblies indicated and manufacturer's written installation instructions.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, or mold damaged.
- C. Sprayed Fire-Resistive Materials: Coordinate with gypsum board shaft wall assemblies so both elements of Work remain complete and undamaged.
- D. Do not bridge building expansion joints with shaft wall assemblies; frame both sides of expansion joints with furring and other support.
- E. Install supplementary framing in gypsum board shaft wall assemblies around openings and as required for blocking, bracing, and support of gravity and pullout loads of fixtures, equipment, services, heavy trim, furnishings, wall-mounted door stops, and similar items that cannot be supported directly by shaft wall assembly framing.
1. Reinforcing: Provide where items attach directly to shaft wall assembly as indicated on Drawings; accurately position and secure behind at least one layer of face panel.

- F. Isolate perimeter of gypsum panels from building structure to prevent cracking of panels while maintaining continuity of fire-rated construction.
- G. Firestop Tracks: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
- H. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect while maintaining fire-resistance rating of gypsum board shaft wall assemblies.
- I. Sound-Rated Shaft Wall Assemblies: Seal gypsum board shaft walls with acoustical sealant at perimeter of each assembly where it abuts other work and at joints and penetrations within each assembly.
- J. Gypsum Board Cants: At projections into shaft, install gypsum board cants covering tops of projections.
- K. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.
- L. Remove and replace panels that are wet, moisture damaged, or mold damaged.

END OF SECTION 09 2116.23

1.0 GENERAL

1.1 SCOPE: This section covers resilient tile flooring, and base.

1.2 EXAMINATION OF SUBSTRATE: Installer must examine the substrate and the conditions under which the resilient tile work is to be performed and notify the contractor, in writing, of any unsatisfactory conditions. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to the Installer. Surface must be smooth, level at the required finish elevation, without more than 1/8" in 10'-0" variation from level or slopes, as shown.

1.3 SUBMITTALS:

- A. Manufacturer's Data: For information only, submit two copies of the manufacturer's specifications and installation instructions for each type of resilient tile required.
- B. Samples: Submit two sets of samples of each type and color required. Provide full-size samples of each type of tile required and show the range of color and pattern variation. Sample submittals will be reviewed for color, texture and pattern only. Compliance with all other requirements is the exclusive responsibility of the contractor.
- C. Submittals:
 - 1. Product Data indicating percentages by weight of post consumer and post industrial recycled content for products having recycled content.
 - 2. Manufacturers' product data for adhesives and sealants, including printed statement of VOC content.
- D. Maintenance Instructions: Resilient Tile Flooring: Submit the manufacturers' written instructions for recommended practices for each type of tile work.
- E. Replacement of Material: Submit to Owner at project site, unless otherwise directed, one box of each type and color of tile for each 75 boxes, or fraction thereof, of each type and color installed.

2.0 PRODUCTS

2.1 RESILIENT FLOORING (HIGH PSI RATING AND VOC FREE):

- A. **VCT (Vinyl Composition Tile)** Shall be Tile as manufactured by Armstrong or approved equal. Flooring shall meet test requirements of Federal Specification SS-T-312B (1), Type IV, Composition. Up to five (5) colors shall be used from the following standard tile patterns by Armstrong (See drawings): *Imperial Texture Standard Excelon Tiles* or as selected by Architect. Install tile grain in one direction (do not quarter turn). See layout plans for floor patterns & distribution. Select from below:

VCT-1 Basis of Design General Field Color: Selection to be determined by Architect.

- 1. Size shall be 12" x 12" x 2 mm
- 2. Flooring shall be installed according to manufacturer's recommendations.
- 3. THIS TILE IS 100% ASBESTOS FREE.

- 2.2 ADHESIVES (Cement): Waterproof, stabilized type as recommended by the tile manufacturer. Asphalt emulsions and other non-waterproof types not acceptable.
- 2.3 CONCRETE SLAB PRIMER: Non-staining type with a cementitious body as recommended by tile manufacturer.
- 3.0 EXECUTION:
- 3.1 SUBFLOORS: Prior to start of laying the tile units, broom clean or vacuum all surfaces to be covered and inspect the subfloor. Start of laying tile will indicate acceptance of subfloor conditions and full responsibility for the completed work.
- 3.2 CONCRETE SLAB PRIMER: Apply if recommended by tile manufacturer, prior to application of the adhesive. Apply in compliance with manufacturer's directions.
- 3.3 LEVELING PADS: **Provide ¼" vinyl leveling pads at transitions from vinyl composition tile to 3/8" thick Terrazzo Floor at doors of Classrooms and other adjacent areas for 36" into the area receiving vinyl composition tile.**
- 3.4 CONTINUOUSLY HEAT Areas to receive tile to a temperature of 70 degrees F. for at least 48 hours prior to installation when project conditions are such that heating is required to raise the temperature to 70 degrees F., temperature continuously during and after installation as recommended by the tile manufacturer, but for not less than 48 hours.
- 3.5 INSTALL TILE: Only after all finishing operations, including painting, have been completed and permanent heating system is operating. Moisture content of concrete slabs, building with air temperature and relative humidity must be within limits recommended by tile manufacturer.
- 3.6 PLACE TILE UNITS with adhesive cement in strict compliance with the manufacturer's recommendations Butt tile units tightly to vertical surfaces, thresholds, nosing and edgings, Scribe as necessary around obstruction and to produce neat joints, laid tight, even and in straight parallel lines. Extend tile units into toe spaces, door reveals and into closet and similar openings.
- 3.7 MAINTAIN REFERENCE MARKERS, holes or openings that are in place or plainly marked for future cuttings by repeating on the finish tile as marked in the subfloor. Use chalk or other non-permanent marking devise.
- 3.8 LAY TILE FROM CENTER MARKS established with principal walls, discounting minor offsets, so those tiles at opposite edges of the room are of equal width. Adjust as necessary to avoid use of cut widths less than 6" at room perimeters. Lay tile square to room axis, unless otherwise shown.
- 3.9 MATCH TILES for color and pattern by using tile from cartons in the same sequence as packaged. Cut tile neatly to and around all fixtures. Broken, cracked, chipped or deformed tile are not acceptable.
- 3.10 TIGHTLY CEMENT TILE to sub-base, without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks through tile, or other surface imperfections.
- 3.11 PLACE RESILIENT EDGE STRIPS tightly butted to tile and secure with adhesive. Provide edging strips at all unprotected edges of tile, unless otherwise shown.

- 3.12 APPLY RESILIENT wall base to all columns, pilasters, science equipment, and other permanent fixtures in rooms or areas where base is required. Install base in as long lengths as practical with preformed units, or fabricate from base materials with mitered or coped intersections. Tightly bond base to backing throughout the length of each piece, with continuous contact at horizontal and vertical surfaces. ON masonry surfaces, or other similar irregular surfaces, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
- 3.13 APPLY FLOOR ACCESSORIES using methods as recommended by manufacturer.
- 3.14 CLEANING AND PROTECTION: The GC is responsible for protecting floors until the date of substantial completion.
- 3.15 FINISHING: After completion of the project and just prior to final inspection of the work, the GC will thoroughly clean tile floors and accessories. Apply wax and buff with type of wax, number of coats up to 4 coats and buffing procedures in compliance with the tile manufacturer's instructions or Owners instructions.

END OF SECTION 09 6600

1.0 GENERAL

1.1 SCOPE: This section covers rubber flooring accessories complete. The extent of work is as shown on drawings and in schedules or if not shown as required at termination of carpet and resilient flooring edges or transitions as required.

1.2 RELATED DOCUMENTS:

- A. Drawings and General Provisions of contract, including general and supplementary conditions and Division 1 Specification Sections, apply to work of this section.
- B. Resilient Tile Flooring - Section 09 6600

1.3 QUALITY ASSURANCE:

- A. Manufacturer: Provide each type of rubber flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds. All products shall be 100% asbestos free.
- B. Products as manufactured by one of the following and chosen by the Architect depending on color selections.
 - 1. Roppe Rubber Corporation

1.4 SUBMITTALS:

- A. Product Data: Submit two copies of manufacture's technical data and installation instructions for each type of rubber accessory.
- B. Samples: Submit one set of samples of each type, color and finish of flooring and accessory required. Provide full-size tile units and 6" long sample of accessory. Include full range of flooring color and pattern variation. Sample submittals will be for reviewed for color, texture and pattern only. Compliance with all other requirements is exclusive responsibility of Contractor.
- C. Replacement Material: After completion of work, deliver to project site replacement materials from same manufactured lot as materials installed, not less than one box for each 50 boxes or fraction thereof, for each type, size and color installed.

1.5 JOB CONDITIONS:

- A. Maintain minimum temperature of 65 degrees F (18 degrees C) in spaces to receive resilient flooring for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. Store flooring materials in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 55 degrees F (13 degrees C) in areas where work is completed.
- B. Install rubber flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test.

2.0 PRODUCTS:

2.1 RUBBER MATERIALS:

- A. Base shall be 1/8" thick EXTRUDED RUBBER COVE BASE. It shall be constructed of first-quality materials properly vulcanized and shall be smooth and free from imperfections which distract from its appearance. The base shall conform fully to the requirements of Federal Specifications SS-W-40(d) Type 1 rubber. All Cove Base shall be standard 1/8" thick with a height of 4" in lengths of 120 ft. rolls and of 1/8" thickness. Wrap corners 6" beyond corners but do not score through rubber base or cut toe of base. Color shall be selected by Architect equally priced to Burgundy by Roppe.
- B. Rubber accessories shall be constructed of first quality materials properly vulcanized and shall be smooth and free from imperfections which distract from its appearance. These accessories shall conform full to the requirements of federal specifications SS-W-40A Type 1 rubber. Accessories shall include: Reducer strips, glue down carpet edges, carpet edge guards, custom carpet edging, reducer strips, tile/carpet jointers, and other shapes as required. Sizes shall be as required. Colors shall be selected by the Architect equally priced to Burgundy by Roppe.
- C. Adhesives (Cements): Low Voc Waterproof, stabilized type as recommended by flooring manufacturer to suit material and substrate conditions.
- D. Concrete Slab Primer: Non-staining type as recommended by flooring manufacture.
- E. Leveling Compound: Type as recommended by manufacturer.

3.0 EXECUTION:

3.1 PREPARATION:

- A. Concrete Subfloors: Remove any existing resilient tile flooring and condition subfloors to provide smooth, clean, continuous surface. Use underlayment where required to provide level surfaces ready to receive tile. Fill holes and cracks in the concrete subfloors with crack filler. Remove grease, dirt, loose particles, and other foreign matter that would prevent adhesion. Then rinse subfloors and allow to dry thoroughly before applying adhesive.
- B. Moisture Test: After concrete floor surfaces have been cleaned, small patches of adhesive to be used shall be spread in several locations in each room and allowed to dry overnight. If the adhesive can be peeled easily from the floor surface, the floor is not sufficiently dry. The test shall be repeated until the adhesive adheres properly. When the adhesive adheres tightly to the floor surface, the resilient flooring shall be applied.
- C. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.
 - 1. Rubber Base: Remove any surface film on back of base due to mold release agents as recommended by base manufacturer, before applying base adhesive. Provide performed molded internal and external corners and end stops. Wherever rubber base is used in conjunction with vinyl wall covering, spread adhesive to within 1/4" below top of base. Immediately remove spots or smears of adhesive from exposed surface.

2. Rubber Accessories: Shall be installed in accordance with manufacturer's recommendation. Immediately remove spots or smears adhesive as installation proceeds.

END OF SECTION 09 6610

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes surface preparation and the application of paint systems on the following interior substrates:

1. Concrete.
2. Concrete masonry units (CMU).
3. Steel.
4. Galvanized metal.
5. Wood.
6. Gypsum board.
7. Cotton or canvas insulation covering.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS:

The following categories of work are not included as part of the painter-applied finish work or are included in other sections of the specifications except as otherwise shown on drawings or specified herein.

1. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural steel, miscellaneous metal items, hollow metal work and shop-fabricated or factory built metal mechanical and electrical equipment or accessories.
2. Pre-Finish Items: Unless otherwise indicated, do not include painting when factory-finishing or installer-finishing is specified for such items as (but not limited to) metal toilet enclosures, acoustic materials, architectural woodwork and casework, finished mechanical and electrical equipment including light fixtures, switches, gear and distribution cabinets. Mechanical equipment that does not have finish paint will be painted under this section.
3. Concealed Surfaces: Unless otherwise indicated, painting is not required on wall or ceiling surfaces in concealed areas and inaccessible areas, such as foundation spaces, furred areas, utility tunnels, pipe spaces, duct shafts, and elevator shafts, as applicable to this project. Paint all piping, equipment and other items in these spaces as required.
4. Finish Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials shall not be painted, except as otherwise specified.
5. Operating Parts and Labels: Do not paint any moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sensing devices, motor and fan shafts, unless otherwise indicated. Do not paint over any code-required labels, such as Underwriter's Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.
6. Colors: Paint colors will be as selected by the Architect. Before any painting is done the Architect will furnish the Contractor with the selected color chips and schedule showing where the various colors will be applied. Finish colors shall exactly match the color chips. There will be a minimum of 14 colors used in this project. Color changes will be

made at accent walls in rooms, door frames to walls, soffits in ceilings, breaks in walls, flutes in columns, column details at bases, column detail at capitols and at other breaks, changes in planes and elsewhere as deemed necessary by the Architect.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each finish and for each color and texture required.

1.4 LIST OF PROPOSED MATERIALS

- A. List of Proposed Materials: Verify, in writing, that products proposed are from products listed herein. This submittal shall include full identifying product names and catalog numbers. Materials for prime coats, undercoats, finish coats and thinning applied to same surface shall be produced by the same manufacturer.

1.5 QUALITY ASSURANCE

- A. MPI Standards:
 - 1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
 - 2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.
- B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
 - b. Other Items: Architect will designate items or areas required.
 - 2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
 - 3. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.6 DELIVERY AND STORAGE

- A. Deliver materials to job in original containers with labels intact and seals unbroken. Store materials and painters tools in a single room assigned for this use only. Keep storage place clean and neat and damage to it shall be corrected. Keep paint and other volatile material tightly covered at all times when not in actual use. Remove soiled and oily rags and waste from building every night and take every precaution to prevent spontaneous combustion.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
 - 1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.8 JOB, WEATHER, AND TEMPERATURE CONDITIONS

- A. Interior Painting: Maintain temperature in building at constant 65 degrees F. or above, during drying of plaster and masonry and provide adequate ventilation for escape of moisture from building in order to prevent mildew, damage to other work and improper drying of paint. Once painting has commenced, provide constant temperature of 65 degrees F. or above, and prevent wide variations in temperature which might result in condensation on freshly painted surfaces. Before painting is started in any area, broom clean it and remove excessive dust from all areas to be painted. Broom cleaning, after painting operations begin in a given area will not be allowed; cleaning shall then be done with only commercial vacuum cleaning equipment. Provide adequate illumination in all areas where painting operations are in progress.

1.9 COOPERATION WITH OTHER TRADES: Schedule this work and coordinate it with other trades and do not proceed until other work and/or job conditions are as required to achieve satisfactory results. Examine drawings and specifications for the work of various other trades and become familiar with all their provisions regarding painting. Surfaces that are left unfinished by requirement of other sections shall be painted or finished as part of the work covered by this section.

1.10 INSPECTION OF SURFACES:

- A. Examine surfaces to receive paint finishes, in accord with Contract Conditions, for defects which cannot be corrected by procedures specified herein under "Preparation of Surfaces" and which might prevent satisfactory painting results. Do not proceed with work until such defects are corrected. Commencing of work constitutes acceptance of surfaces and thereafter, Contractor shall be responsible for satisfactory results as required herein.
- B. Painting of Previously Painted Surfaces: The painter shall determine paint compatibility with specified products and surfaces previously painted. Should paints be non-compatible, notify the architect. Otherwise, lightly sand or treat surfaces as recommended by the manufacturer prior to installation of paint.

PART 2 - PRODUCTS

- 2.1 Approved Manufacturers:
 - 1. Sherwin-Williams
 - 2. Rose Talbert
 - 3. Pittsburgh Paints
 - 4. Benjamin Moore

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:

1. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
2. Nonflat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
4. Floor Coatings: VOC not more than 100 g/L.
5. Shellacs, Clear: VOC not more than 730 g/L.
6. Shellacs, Pigmented: VOC not more than 550 g/L.
7. Flat Topcoat Paints: VOC content of not more than 50 g/L.
8. Nonflat Topcoat Paints: VOC content of not more than 150 g/L.
9. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
10. Floor Coatings: VOC not more than 100 g/L.
11. Shellacs, Clear: VOC not more than 730 g/L.
12. Shellacs, Pigmented: VOC not more than 550 g/L.
13. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.
14. Dry-Fog Coatings: VOC content of not more than 400 g/L.
15. Zinc-Rich Industrial Maintenance Primers: VOC content of not more than 340 g/L.
16. Pre-Treatment Wash Primers: VOC content of not more than 420 g/L.

C. Chemical Components of Field-Applied Interior Paints and Coatings: Provide topcoat paints and anti-corrosive and anti-rust paints applied to ferrous metals that comply with the following chemical restrictions; these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:

1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
2. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein.
 - b. Acrylonitrile.
 - c. Antimony.
 - d. Benzene.
 - e. Butyl benzyl phthalate.
 - f. Cadmium.
 - g. Di (2-ethylhexyl) phthalate.
 - h. Di-n-butyl phthalate.
 - i. Di-n-octyl phthalate.

- j. 1,2-dichlorobenzene.
- k. Diethyl phthalate.
- l. Dimethyl phthalate.
- m. Ethylbenzene.
- n. Formaldehyde.
- o. Hexavalent chromium.
- p. Isophorone.
- q. Lead.
- r. Mercury.
- s. Methyl ethyl ketone.
- t. Methyl isobutyl ketone.
- u. Methylene chloride.
- v. Naphthalene.
- w. Toluene (methylbenzene).
- x. 1,1,1-trichloroethane.
- y. Vinyl chloride.

D. Colors: As selected by Architect from manufacturer's full range.

2.3 PREPARATION AND APPLICATION CLEANING: The Painting Contractor will not only protect his work at all times, but will also protect all adjacent work and materials by suitable covering or other method during the progress of his work. Upon completion of the work, he is to remove all paint and varnish spots from the premises, all rubbish and accumulated materials and he is to leave the work in a clean, orderly and acceptable conditions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Masonry (CMU): 12 percent.
 - 3. Wood: 15 percent.
 - 4. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION AND APPLICATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- D. Painting Mechanical and Electrical Work: Paint only walls and floor in equipment rooms when scheduled, unless noted otherwise. Paint items exposed in equipment room spaces (when indicated) and occupied spaces including, but not limited to, the following:
 - 1. Mechanical Work:
 - a. Uninsulated metal piping.
 - b. Pipe hangers and supports.
 - c. Tanks that do not have factory-applied final finishes.
 - d. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
 - e. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - f. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
 - 2. Electrical Work:
 - a. Switchgear.
 - b. Panelboards.
 - c. Electrical equipment that is indicated to have a factory-primed finish for field painting.
- E. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- F. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.3 INTERIOR PAINTING SCHEDULE

- A. Concrete Substrates, Light Traffic Surfaces (Sealed Concrete):
 - 1. Water-Based Clear Waterproofing Sealer System (Non-film Forming):

- a. First Coat: H&C HB-150 Siloxane Water Repellent 108-0332 @ 100-150 sq. ft. per gallon coverage rate, applied with commercial pump-up sprayer only. Follow data page directions exactly for an H&C color coat system.
- b. Finish coat: H&C Silicone Acrylic Concrete Stain/Sealer @ 200-250 sq. ft. per gallon coverage rate. Apply topcoat after 24 hours and before 36 hours has passed since applying the sealer.

B. CMU Substrates:

1. High-Performance Water-based Gloss Epoxy System (Kitchen areas and toilet areas)
 - a. Prime Coat: B42W200/B42V201 Cement Plex 875 Block Filler.
 - b. Intermediate: Water-based Tile Clad Epoxy B73-100 Series/B73V100.
 - c. Finish: Water-based Tile Clad Epoxy B73-100 Series/B73V100.
2. High-Performance Industrial Finish Coat Systems:
 - a. Prime Coat: B25W25 Preprite Block Filler
 - b. Intermediate: DTM Acrylic Semigloss B66W200(S/G) or DTM Acrylic B66W100 (Gloss). (semigloss).
 - c. Finish Coat: DTM Acrylic Semigloss B66W200(S/G) or DTM Acrylic B66W100 (Gloss). (semigloss).

C. Steel Substrates:

1. Fast-Drying Water-based Enamel System:
 - a. Prime Coat: Pro-Industrial ProCryl Universal Metal Primer B66W310.
 - b. Intermediate Coat: SherCryl HPA B66 300 Series (gloss).
 - c. Topcoat: SherCryl HPA B66 300 Series (gloss).
2. Water-Based Dry-Fall System (shop primed or previously painted substrates – interior metal exposed, except aluminum; Color of mechanical and conduits will contrast with deck color):
 - a. Full Prime: KEM Kromik Metal Primer B50Z series. Allow 72 hours cure time before top coating.
 - b. First Coat: Sherlastic Waterbased Dryfall B42W17 series (gloss).
 - c. Finish Coat: Sherlastic Waterbased Dryfall B42W17 series (gloss).
3. High-Performance Industrial Finish Coat Systems (underside of roof decking used as ceilings – non-ferrous):
 - a. Prime Coat: DTM Primer B66W1
 - b. Intermediate: DTM Acrylic Semigloss B66W200(S/G) or DTM Acrylic B66W100 (Flat white finish).
 - c. Finish Coat: DTM Acrylic Semigloss B66W200(S/G) or DTM Acrylic B66W100 (Flat white finish).

D. Dressed Lumber Substrates: Interior wood trim and grilles.

1. Latex System:
 - a. Prime Coat: : B19WV1002 Acrylic Primer 102.
 - b. Intermediate Coat: SherCryl HPA B66 300 Series (gloss).
 - c. Topcoat: SherCryl HPA B66 300 Series (gloss)

- E. Wood Panel Substrates: Including painted plywood at electrical and data rooms.
 - 1. Latex System:
 - a. Prime Coat: B19WV1002 Acrylic Primer 102 .
 - b. Intermediate Coat: ProMar 200 Latex Flat (B31W200 Series), Eg-Shel (B20W200 Series)
 - c. Topcoat: ProMar 200 Latex Flat (B31W200 Series), Eg-Shel (B20W200 Series)
- F. Gypsum Board Substrates:
 - 1. Latex System:
 - a. Prime Coat: Preprite 200 Latex Wall Primer B28W200.
 - b. Intermediate Coat: ProMar 200 Latex Eg-Shel (B20W200 Series),
 - c. Topcoat: ProMar 200 Latex Eg-Shel (B20W200 Series)
 - 2. Latex System (Interior walls to receive wall covering:
 - a. Prime Coat: Preprite Pre-wall Covering Wall Primer B28W980.
- G. Cotton or Canvas Insulation-Covering Substrates: Including pipe and duct coverings.
 - 1. Latex System:
 - a. Prime Coat: B51W20 Preprite Primer / Sealer
 - b. Intermediate Coat: ProMar 200 Latex Flat (B30W200 Series)
 - c. Topcoat: ProMar 200 Latex Flat (B30W200 Series)

END OF SECTION 09 9123