



PROJECT MANUAL

**STATE OF MICHIGAN
LANSING, MICHIGAN**

**.GOV – 719 GRISWOLD STREET
DETROIT, MICHIGAN**

BIDS AND PERMIT

FEBRUARY 7, 2013

PROJECT NO. 2012108

ARCHITECT:

NEUMANN SMITH ARCHITECTURE

THIS PAGE INTENTIONALLY LEFT BLANK

State of Michigan
.gov
719 Griswold St.

2012108

Bids and Permit
February 7, 2013

PROJECT	.GOV – 719 GRISWOLD STREET DETROIT, MICHIGAN
OWNER	STATE OF MICHIGAN LANSING, MICHIGAN
BUILDING MANAGER	BEDROCK MANAGEMENT SERVICES 1092 WOODWARD AVENUE DETROIT, MICHIGAN 48226
ARCHITECT	NEUMANN SMITH ARCHITECTURE 400 GALLERIA OFFICENTRE; SUITE 555 SOUTHFIELD, MICHIGAN 48034
PROJECT NO.	2012108

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 00 0107 - SEALS PAGE

PART 1 - GENERAL

ARCHITECTURAL

I hereby certify this plan, specification, or report was prepared by myself or under my direct supervision and I am a duly Registered Architect under the laws of the State of Michigan.

Date _____ Registration No. _____

MECHANICAL

I hereby certify this plan, specification, or report was prepared by myself or under my direct supervision and I am a duly Registered Engineer under the laws of the State of Michigan.

Date _____ Registration No. _____

ELECTRICAL

I hereby certify this plan, specification, or report was prepared by myself or under my direct supervision and I am a duly Registered Engineer under the laws of the State of Michigan.

Date _____ Registration No. _____

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SEALS PAGE

State of Michigan
.gov
719 Griswold St

2012108

Bids and Permit
February 7, 2013

SECTION 000110 - TABLE OF CONTENTS

SECTIONS

Introductory Information

00 0101	Project Title Sheet
00 0107	Seals Page
00 0110	Table of Contents

Division 01 - General Requirements

01 1200	Multiple Contract Summary
01 2500	Substitution Procedures
01 2500.13	Substitution Request Form
01 2600	Contract Modification Procedures
01 3323	Shop Drawings, Product Data, and Samples
01 3323.13	Authorization for Release of CAD Files
01 4216	Definitions
01 6000	Common Product Requirements
01 7329	Cutting and Patching
01 7423	Final Cleaning
01 7800	Closeout Submittals
01 7839	Project Record Documents

Division 02 - Existing Conditions

02 4119	Selective Structure Demolition
---------	--------------------------------

Division 03 - Concrete

03 3514	Polished Concrete
---------	-------------------

Division 04 – Masonry – NOT USED

Division 05 - Metals

05 7500	Decorative Formed Metal
---------	-------------------------

Division 06 - Wood, Plastics, and Composites

06 1000	Rough Carpentry
06 4023	Interior Architectural Woodwork

Division 07 - Thermal and Moisture Protection

07 2129	Sprayed Insulation
07 8400	Firestopping
07 9200	Joint Sealants

Division 08 - Openings

08 1113	Hollow Metal Doors and Frames
08 4226	All-Glass Entrances

08 7100	Door Hardware
08 8000	Glazing

Division 09 - Finishes

09 2116	Gypsum Board Assemblies
09 5113	Acoustical Panel Ceilings
09 6513	Resilient Base and Accessories
09 6813	Tile Carpeting
09 9100	Painting

Division 10 - Specialties

10 1443	Interior Signage
10 2226	Operable Partitions
10 4413	Fire Extinguisher Cabinets
10 4416	Fire Extinguishers

Division 11 - Equipment

11 3100	Residential Appliances
---------	------------------------

Division 12 - Furnishings

12 2413	Roller Window Shades
12 3640	Stone Countertops

Divisions 13 through 19 – NOT USED

Division 20 – General Mechanical Requirements

20 0001	Mechanical Demolition
20 0010	Basic Mechanical Requirements
20 0020	Electrical Requirements for Mechanical Work

Division 21 – Fire Suppression

21 0500	Common Work Results for Fire Suppression
21 0553	Identification for Fire Suppression Piping and Equipment
21 1300	Fire Suppression Sprinkler Systems

Division 22 – Plumbing

22 0500	Identification for Plumbing Piping and Equipment
22 0719	Plumbing Piping Insulation
22 1005	Plumbing Piping
22 1006	Plumbing Piping Specialties
22 4000	Plumbing Fixtures

Division 23 – Heating Ventilating and Air Conditioning (HVAC)

23 0553	Identification for HVAC Piping and Equipment
23 0593	Testing, Adjusting, and Balancing For HVAC
23 0713	Duct Insulation
23 0913	Instrumentation and Control Devices for HVAC

23 0925	Direct-Digital Control (DDC) System for HVAC
23 2113	Hydronic Piping
23 2500	HVAC Water Treatment
23 3100	HVAC Ducts and Casings
23 3300	Air Duct Accessories
23 3700	Air Outlets and Inlets

Division 23 – Heating Ventilating and Air Conditioning (HVAC)

Divisions 24 and 25 – NOT USED

Division 26 – Electrical

26 0500	Basic Electrical Requirements
26 0501	Minor Electrical Demolition
26 0519	Low-Voltage Electrical Power Conductors and Cables
26 0526	Grounding and Bonding for Electrical Systems
26 0529	Hangers and Supports for Electrical Systems
26 0534	Conduit
26 0537	Boxes
26 0553	Identification for Electrical Systems
26 0920	Electric Submetering
26 0923	Lighting Control Devices
26 2200	Low-Voltage Transformers
26 2416	Panelboards
26 2726	Wiring Devices
26 2817	Enclosed Circuit Breakers
26 5100	Interior Lighting
26 5701	Occupancy Sensors and Indoor Photocells

Division 26 – Electrical

28 3100	Fire Detection and Alarm
---------	--------------------------

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01 1200 - MULTIPLE CONTRACT SUMMARY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 PROJECT

- A. The Owner intends to fit out an office space in the Chrysler House located at 719 Griswold in Detroit, Michigan.
 - 1. There will be work within the suite and outside the suite. The work outside of the suite will include the reworking of existing wood storefront and entrance systems. Work within the suite will consist of new partitions, doors, frames, and finishes.
- B. The Owner has employed a Construction Manager to bid, coordinate, phase, monitor and inspect the Construction Work.
- C. All construction shall be phased so as to maintain Owner's operations. Refer to the Construction Manager's bidding information for additional descriptions and requirements.

1.03 CONTRACTS

- A. The Construction Manager is soliciting lump-sum proposals for each Bid Package of the Work. The extent of work in each Bid Package shall be fully described by the Construction Manager. All contracts shall be held by the Construction Manager. Refer to the Construction Manager's bidding information for additional descriptions and requirements.
- B. Work for the complete construction of the Project will be under the multiple contracts awarded by the Construction Manager. The Construction Manager will manage the construction of the Project.
- C. Important Notice to all Bidders and Contractors:
 - 1. The "Contract Documents", as defined in the General Conditions, include "The Drawings" and "Specifications". Although Drawings are grouped and identified by classification of Work, the Contractor shall be responsible for his work as specified herein and as indicated on the Drawings.
 - 2. Contractors are also advised they are responsible for all Work shown in any of the documents and they must execute the Work of their trade on all drawings, not just the trade specific drawings.
 - a. Hence all architectural, structural, mechanical, plumbing, fire protection, electrical controls or security electronics work is not necessarily shown on the drawings which depict that specialty or particular area of work (i.e., plumbing may be on architectural drawings, etc.).
 - b. This means all contractors or subcontractors of any tier, are responsible for all work specified or shown anywhere in the drawings and no additional monies will be allowed for work shown anywhere within the Contract Documents.
 - c. Contractors are further advised they are to provide complete and functional systems wherever it is reasonably inferable that the drawing or specification INTENDS to depict the same.
 - 1) Example: A lavatory in a bathroom which is shown on the architectural drawings shall be plumbed for hot and cold domestic water and drain waste even if not shown on the plumbing drawings. A similar standard shall apply to all trades.
 - d. Contractors are directed to use indicated dimensions for determining material quantities and for other reasons. No additional monies will be allowed due to contractors using "Scaling Instruments" to determine material quantities or for other reasons.
- D. Related Sections

1. Some sections of the Specifications (Divisions 01 through 49) may include a paragraph with this title.
2. This paragraph is an aid to the Project Manual and is NOT INTENDED to include all sections which may be related. It is the Trade Contractor's obligation to coordinate all sections whether indicated under "Related Sections" or not.

1.04 OCCUPANCY BY OWNER

- A. The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the Work.
 1. Obtain a Certificate of Occupancy from local building officials and/or other authorities having jurisdiction prior to Owner occupancy.
 - a. Final Certificate of Occupancy shall be a complete and unencumbered Certificate. All fee's, if any, for inspections, testing, surveys, etc., shall be the responsibility of the Contractor.
 - b. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Upon occupancy, the Owner will operate and maintain mechanical and electrical systems serving occupied portions of the building.

1.05 CONTRACTOR USE OF PREMISES

- A. During the construction period the Contractor shall have full use of the Site for construction operations.
 1. The Contractor's use of the Site is limited only by the Owner's right to perform work or retain other contractors on portions of the Project.
 2. Work and personnel on site will not be permitted on weekends, holidays, before 7:00 am or after 5:00 pm on weekdays, unless authorized in writing by Owner.
- B. Limit use of premises to construction activities in areas indicated; allow for Owner occupancy and public use. Coordinate use under direction of Owner and Architect.
 1. Move any stored materials, equipment or products, which interfere with operations of the Owner.
 2. Maintain legal, protected fire egress at all times.
- C. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
- D. Keep driveways and entrances serving the premises clear and available to the Owner, Owner's employee's, and General Public at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
 1. Provide access for emergency vehicles at all times.
 - a. Do not block or close roadways, or fire lanes without providing auxiliary and /or temporary access to Site for emergency vehicles. Provide Owner and local fire department minimum 48 hours notice.
 - b. Fire hydrants shall remain accessible at all times.
 2. Contractor's personnel shall park in designated areas only.
- E. Maintain the existing buildings in a weathertight condition throughout the entire construction period. Repair any damage caused by demolition operations. Take all precautions necessary to protect the building and occupants during demolition operations.
- F. Owner Regulations: All construction personnel shall observe the following Owner regulations at all times when on the Project Site:
 1. Devices not specifically required for construction operations that are capable of generating audible noise such as radios, cassette or CD players, or similar equipment will not be permitted on site.

2. Require construction site personnel to be fully and properly dressed at all times. Bare torsos, legs, and feet are prohibited.
3. Smoking will not be permitted in the existing building. Do not permit smoking on site except in vehicles.
4. Maintain strict discipline and good order among construction site personnel. Do not permit loud talking or use of profane language. Use of profane language is cause for immediate dismissal.
5. Drugs, alcohol, other offensive materials, and firearms are prohibited and cause for dismissal and/or criminal prosecution.
6. Do not permit construction site personnel to access or utilize existing building facilities including vending machines, drinking fountains and toilet rooms except as specifically directed.

1.06 TEMPORARY FACILITIES AND CONTROLS

- A. Regulations: Comply with governing regulations, utility company requirements and recommendations for construction of temporary facilities including (but not necessarily limited to) code compliances, permits, inspections, testing and health and safety compliance.
- B. Standards: Comply with NFPA Code 241 "Building Construction and Demolition Operations", ANSI - A-10 Series Standards "Safety Requirements for Construction and Demolition".
- C. Temporary Site Access: Enter site only as directed by Owner. Arrange in advance with Owner for deliveries requiring other access.
 1. At conclusion of work remove all temporary construction and restore site to preconstruction condition.
 2. Do not allow vehicles to track mud, dirt or debris.
- D. Construction Parking: Park only within area designated by Owner. Control as required for orderly use.
 1. Do not permit parking on sidewalks, lawns or undesignated parking areas.
- E. Storage: Store materials and equipment and stage operations only within site staging area.
 1. Suitably store materials so as not be exposed to weather where damage could result, or not invite tampering or theft. Storage is at Contractor's risk, except as provided under insurance.
- F. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard. Provide lighting, including flashing red or amber lights, as required.
- G. Temporary Sanitary Facilities: Comply with governing regulations including safety and health codes. Install sanitary facilities in locations not visible to the general public.
- H. Temporary Electric Power Service: Electric power will be made available for use by the Owner.
- I. Water: Water will be made available on-site for use by the Owner.
- J. Security: Do not allow unauthorized persons into construction areas. Carefully monitor and control all access to work areas. Lock all doors and gates when not in use and after working hours.
- K. Construction Aids: Provide scaffolding, ramps, runways, staging, cross-lot bracing, barriers, closures, platforms, swing stages and temporary partitions. Design, construction and maintenance of construction aids is sole responsibility of Contractor.
- L. Cleanup: Maintain the premises free of accumulation of waste material or rubbish caused by construction operations at all times. Remove all waste materials and rubbish on a daily basis. Remove all tools, construction equipment, machinery and surplus materials at completion of work.
- M. Safety: Comply with applicable requirements of OSHA, MIOSHA, EPA and any other government entity having jurisdiction.

PART 2 PRODUCTS - NOT APPLICABLE
PART 3 EXECUTION - NOT APPLICABLE
END OF SECTION

SECTION 01 2500 - SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

1.03 DEFINITIONS

- A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions". The following are NOT considered substitutions:
 - 1. Substitutions requested by Bidders during the bidding period, and accepted prior to award of Contract, are considered as included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
 - 2. Revisions to Contract Documents requested by the Owner or Architect.
 - 3. Specified options of products and construction methods included in Contract Documents.
 - 4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.04 REQUESTS FOR SUBSTITUTION

- A. Substitutions: For a period of 15 working days after Subcontract Award, Architect will consider written requests from Contractor for substitution of products. Requests received more than 15 working days after Subcontract award may be considered or rejected at the discretion of the Architect.
 - 1. Architect will consider substitutions after 15 days of Subcontract award only if one of the following conditions applies.
 - a. Specified products are no longer manufactured.
 - b. Owner will realize an additional cost savings over and above the original Bid cost.
 - c. Owner will receive a superior product to those specified and/or realize a significant maintenance and operating cost savings.
 - d. Overall construction time will be reduced (not just the time for the trade offering the substitution).
- B. A request for substitution constitutes a representation that the Contractor:
 - 1. Has investigated the proposed product and determined it is equal to or exceeds the quality level in all respects of the specified product and that it will perform adequately in the application intended.
 - 2. Will provide the same warranties or bonds for substitution as for product specified.
 - 3. Will coordinate installation as an accepted substitution into the Work, and make such other changes as may be required to make the work complete in all respects with no additional cost to the Owner or other contractors.
 - 4. Waives all claims for additional costs or time extension under his responsibility which may subsequently become apparent.
 - 5. Will pay all Architect's and Engineer's redesign cost, special inspections, and all other cost caused by substitutions.
- C. Submit a separate request for each product. Each request shall be on a separate "Substitution Request" form, included at the end of this Section. Provide complete data, drawings and samples as appropriate, with each request, including:

1. Comparison of qualities of proposed substitution with that specified.
 2. Changes required in other elements of work because of substitution.
 3. Effect on construction schedule.
 4. Cost data comparing proposed substitution with product specified.
 5. Any required license fees or royalties.
- D. Architect will be judge of acceptability of proposed substitution except where cost is involved.
- E. Substitutions WILL NOT be considered when they are indicated or implied on shop drawings or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Architect will review requests for substitutions with reasonable promptness and notify Contractor in writing of decision to accept or reject requested substitution.

1.05 SUBMITTAL REQUIREMENTS

- A. Submit 3 copies of each request for substitution for consideration. Submit requests on the "Substitution Request" form included at the end of this Section and in accordance with procedures required for Change Order proposals.
1. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Certification by the Contractor and Supplier that the substitution proposed is equal-to or exceeds the specified product in every significant respect to that required by the Contract Documents, and will perform adequately in the application indicated.
- B. For products:
1. Product identification, including manufacturer's name.
 2. Manufacturer's literature, marked to indicate specific model, type, size, and options to be considered:
 - a. Product description.
 - b. Performance and test data.
 - c. Reference standards.
 - d. Difference in power demand, air quantities, etc.
 - e. Dimensional differences from specified unit.
 3. Full size samples if requested.
 4. Architect reserves right to retain sample until physical units are installed on Project for comparison purposes.
 5. Requester pay all costs of furnishing and return of samples.
 6. Architect is not responsible for loss of, or damage to, samples.
 7. Name and address of at least 3 similar projects and name of Owner's Representative Architect can contact; to discuss product, installation, and field performance data.
- C. For construction methods:
1. Detailed description of proposed method.
 2. Illustrate with drawings.
- D. Itemized comparison of proposed substitute to specified item; indicate variations including size, weight, durability, and visual effect.
- E. Data relating to changes in construction schedule.
- F. Effect and changes required on separate or other contracts.
- G. Coordination information necessary to accommodate the proposed substitute. Include a list of changes or modifications needed to other parts of the Work and to construction performed by separate contractors.
- H. Complete breakdown of costs, of proposed substitution which shall include additional costs and saving generated by proposed substitution and shall indicate amount, if any, to be deducted from Contract Sum if proposed substitution is accepted.

- I. Availability of maintenance and repair services, and sources of repair or replacement items.

PART 2 PRODUCTS

2.01 SUBSTITUTIONS

- A. Conditions: Contractor's substitution request will be received and considered by the Architect when the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.
1. Extensive revisions to Contract Documents are not required.
 2. Proposed changes are in keeping with the general intent of Contract Documents.
 3. The request is timely, fully documented and properly submitted.
 4. The specified products or method of construction cannot be provided within the Contract Time. Request will not be considered if product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 5. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 6. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear.
 7. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certified that the proposed substitution will provide the required warranty.
- B. Substitutions WILL NOT be considered if:
1. Substitutions are not submitted in conformance with this Section.
 2. Acceptance will require substantial revision to the Contract Documents, or building spaces.
 3. Request for substitution does not indicate specific item for which request is submitted.
 4. Request Form is not properly executed
 5. Acceptance of manufacturer only will not be made.
 6. Requested directly by a Subcontractor or supplier.
 7. Insufficient information submitted.
- C. Architect's Action: Within one week of receipt of the request for substitution, the Architect will request additional information or documentation necessary for evaluation of the request. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, which ever is later, the Architect will notify the Contractor of acceptance or rejection of the proposed substitution. Acceptance will be in the form of a Change Order.
1. If a decision on use of proposed substitute cannot be made or obtained within the time allocated, use the product specified by name.
- D. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION



SUBSTITUTION REQUEST

Project: _____ Substitution Request Number: _____

From: _____
To: _____ Date: _____

A/E Project Number: _____
Re: _____ Contract For: _____

Specification Title: _____ Description: _____
Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
Manufacturer: _____ Address: _____ Phone: _____
Trade Name: _____ Model No.: _____
Installer: _____ Address: _____ Phone: _____
History: ☐ New product ☐ 2-5 years old ☐ 5-10 yrs old ☐ More than 10 years old
Differences between proposed substitution and specified product: _____

☐ Point-by-point comparative data attached - REQUIRED BY A/E

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____
Address: _____ Owner: _____
_____ Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain _____

Savings to Owner for accepting substitution: _____ (\$ _____).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

**SUBSTITUTION
REQUEST
(Continued)**

- The Undersigned certifies:
- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
 - Same warranty will be furnished for proposed substitution as for specified product.
 - Same maintenance service and source of replacement parts, as applicable, is available.
 - Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
 - Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
 - Proposed substitution does not affect dimensions and functional clearances.
 - Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
 - Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments: _____

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00.
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00.
- ☐ Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E ☐ _____

SECTION 01 2600 - CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Administrative and procedural requirements for handling and processing Contract Modifications.

1.03 MINOR CHANGES IN THE WORK

- A. Supplemental instructions authorizing minor changes in the Work not involving an adjustment to the Contract Sum or Contract Time may be issued by the Architect on AIA Form G710, Architect's Supplemental Instructions.

1.04 CHANGE ORDER PROPOSAL REQUEST

- A. Owner Initiated Proposal Requests: Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time will be issued by the Architect with a detailed description of the proposed change and supplemental or revised drawings and specifications, if necessary.
 - 1. Proposal requests issued by the Architect are for information only. Do not either stop work in progress or execute any proposed change based on any description or instruction. Continue work in areas surrounding the proposed change as possible, but only to the extent it will not increase the Contract Sum or Contract Time.
 - 2. Unless otherwise indicated in the proposal request, submit an estimate of the cost necessary to execute the proposed change to Owner/ Architect for his review within 21 days of receipt of the proposal request.
 - a. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental and amounts of trade discounts.
 - c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
- B. Contractor Initiated Change Order Proposal Requests: When latent or other unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Owner/ Architect.
 - 1. Include a statement outlining the 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 Contract Time.
 - 2. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, deliver charges, equipment rental and amounts of trade discounts.
 - 4. Comply with requirements in Section 01 2500 - Substitution Procedures, if the proposed change in the Work requires substitution of one product or system for a product or system specified.

1.05 CONSTRUCTION CHANGE DIRECTIVE

- A. When the Owner and the Construction Manager are not in total agreement on the terms of a Change Order Proposal Request, the Architect may issue a Construction Change Directive on AIA Form G714 instructing the Construction Manager to proceed with a change in the work for subsequent inclusion in a Change Order.

1. The Construction Change Directive will contain a complete description of the change in the work and designate the method to be followed to determine change in the Contract Sum or Contract Time.
- B. Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.06 CHANGE ORDER PROCEDURES

- A. Upon Owner's approval of a Request for Change Order, Contractor will issue a Change Order with Architect's concurrence for signatures of the Owner and Contractor as provided in the Conditions of the Contract.

PART 2 PRODUCTS - NOT APPLICABLE

PART 3 EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 01 2613 - REQUESTS FOR INTERPRETATION (RFI)

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Administrative and procedural requirements for handling and processing Requests For Information.

1.03 DEFINITIONS

- A. Definitions used in this article are not intended to change or modify the meaning of other terms in the Contract Documents.
- B. Request for Interpretation (RFI): A request for information by the Construction Manager to the Architect of Record for clarification of intent of any portion of the Contract Documents after the Award of Contract and during the construction of the Project.
- C. The following are NOT Requests for Information.
 - 1. Change Orders.
 - 2. Construction Change Directives.
 - 3. Substitution Request.
 - 4. Bulletin.
 - 5. Field Order.
 - 6. Shop Drawings.
 - 7. Normal questions contained in a typical shop drawing submittal.
 - 8. Clarifications during Bidding.

1.04 REQUESTS FOR INTERPRETATION (RFI'S) DURING CONSTRUCTION

- A. RFI's are logged-in at the Architect's Office, not necessarily with same date as indicated by the Contractor on RFI form. The response time will commence upon the date of receipt by the Architect.
 - 1. E-mail copies of RFI's sent by the Construction Manager and received on or after a Friday after 2:00 PM are to be dated the following Monday, holidays excepted.
- B. Requests for Interpretation (RFI): If clarification of any portion of Construction Documents is required, submit a Request for Interpretation to the Architect of Record and the Owner's Representative in accordance with the following procedures:
 - 1. RFI Format:
 - a. Submit on a standard form developed by the Contractor.
 - b. RFI's shall be sequentially numbered; and include the following:
 - 1) Date
 - 2) Project name and number
 - 3) Contractor's name, address, telephone number and fax number.
 - 4) Description of subject and discipline (trade) in question.
 - 5) Adequate space for Architect of Record to respond, sign, and date.
 - c. Contractor shall submit a copy of the format to the Architect of Record and Owner's Representative at start of Project for review and comment.
- C. RFI Inquiry:
 - 1. Clearly state and completely define the issue requiring interpretation. Provide drawing and detail numbers, specification section numbers and paragraphs, sketches and other reference information.
 - 2. Provide potential solutions to issues when possible.
 - 3. Provide cost and schedule implications, if any.
 - 4. Ambiguous RFI's will be returned to Construction Manager without action taken.

D. RFI Submission Process:

1. The Construction Manager shall submit an RFI, in writing, to Architect of Record immediately with a copy to the Owner's Representative when any issue requiring clarification arises.
 - a. Unless specifically stated on RFI, the Architect of Record and the Owner will assume adjustments to the Contract Amount and the Project Schedule are NOT REQUIRED.
2. The Architect of Record will review and respond only to RFI's received in writing from the Construction Manager.
3. Submit two (2) copies of each RFI and Architect of Record response, including any supplemental drawings and additional instructions, to the Owner's Representative for record purposes.
4. The Construction Manager shall allow seven (7) days for the Architect of Record to review and respond to the RFI.
5. RFI's submitted to the Architect of Record without following these submission procedures will result in rejection of the submission.

E. RFI Log:

1. Construction Manager shall maintain an RFI log indicating the RFI number, subject, date, response date and impact, if any on schedule and cost.
2. Construction Manager shall publish the log at least bi-monthly to the Architect of Record and Owner's Representative.

PART 2 PRODUCTS - NOT APPLICABLE

PART 3 EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 01 3323 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Submittals of shop drawings, product data and samples as required by Contract Documents. Receive, check and coordinate all submittals of all contractors for compliance with Contract Documents prior to submission to Architect, as provided herein.
 - 1. Submittals of products, materials and methods not specified or pre-approved at time of Bidding will be REJECTED.
 - 2. Architect will dispose of submittals in excess of requested number of copies.
- B. Unless notified or indicated otherwise, the Architect shall review all shop drawings and other submittals. Allow two weeks for review.
- C. Architect WILL NOT REVIEW
 - 1. Submittals not specified.
 - 2. Submittals not reviewed by Construction Manager; including Construction Manager stamp with signature, date and comments.
 - 3. Submittals made after work is delivered to site and/or installed
 - 4. Submittal resubmissions unless resubmission is required by Architect.

1.03 DEFINITIONS

- A. Shop Drawings: Drawings, diagrams, schedules and other data specifically prepared for the Work by the Contractor or any subcontractor, manufacturer, supplier or distributor, to illustrate some portion of the work.
- B. Product Data: Illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product or system for some portion of the work.
- C. Samples: Physical examples which illustrate materials, equipment or workmanship and establish standards by which the work will be judged.

1.04 SUBMITTAL SCHEDULE

- A. After acceptance by the Construction Manager of the Contractor's Construction Schedule, prepare a complete Schedule of Submittals. Submit schedule no later than 30 days before Initial Application for Payment.
 - 1. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values and the list of products as well as Contractor's Construction Schedule.
 - 2. Architect WILL NOT guarantee time period for review of submittals until Submittal Schedule is received from Construction Manager. Review period may vary up to 6 weeks prior to receipt of such schedule by Architect.
- B. Prepare the schedule in chronological order. Provide the following information:
 - 1. Scheduled date for the first submittal.
 - 2. Related Specification Section number.
 - 3. Submittal category.
 - 4. Name of the subcontractor.
 - 5. Description of the part of the Work covered.
 - 6. Scheduled date for resubmittal.
 - 7. Scheduled date for the Architect's final release or approval.
- C. Distribution: Following Architect's response to initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated.

1. Post copies in the Project meeting room and temporary field office.
 2. When revisions are made, distribute to same parties and post in same locations. Delete parties from distribution when their assigned part of the Work has been completed and are no longer involved in construction activities.
- D. Schedule Updating: Revise the schedule after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with each meeting report.

1.05 SUBMITTAL REQUIREMENTS

- A. Coordinate preparation and processing of submittals with performance of the work, so work will not be delayed by submittals. Coordinate and sequence different categories of submittals for the same work, and for interfacing units of work, so one will not be delayed for coordination with another. No extension of time will be allowed because of failure to properly coordinate and sequence submittals.
1. Transmit each submittal from Construction Manager to Architect using a transmittal form. Submittals received from sources other than the Construction Manager will be returned without action.
- B. Large Format Submittals: Submit 1 print and 1 electronic copy (.pdf format) of each shop drawing, including fabrication, erection, layout and setting drawings and such other drawings as required under various sections of the Specifications, until final acceptance is obtained. Prepare drawings legibly, drawing plans, elevations, sections and details in scales required and on drawing sheets not larger than 30" X 42" nor smaller than 24" X 30".
1. Architect will review shop drawings returning electronic copy to Contractor.
- C. Small Format Submittals (8-1/2" x 11" or 11" x 17"): Submit electronic copies (.pdf format) of manufacturer's descriptive product data including catalog sheets for materials, equipment and fixtures, showing dimensions, performance characteristics and capacities, wiring diagrams and controls, schedules, and other pertinent information as required. Where printed materials describe more than one product or model, clearly identify which is to be furnished.
- D. Submit electronic copies of manufacturer's descriptive product data including catalog sheets for materials, equipment and fixtures, showing dimensions, performance characteristics and capacities, wiring diagrams and controls, schedules, and other pertinent information as required. Where materials describe more than one product or model, clearly identify which is to be furnished.
- E. Submit samples cured and finished as specified and identical to product proposed for use. Include generic description, source product name or manufacturer, and compliance with requirements. Submit samples for kind, color, pattern, and texture for comparison to actual units delivered and installed.
- F. Shop drawings, product data and samples shall be dated, including Contractor and subcontractor dates of submittal and approval, and marked to show the names of the Project, Architect, Contractor, origination Subcontractor, manufacturer or supplier, and separate detailer, if pertinent. Shop drawings shall completely identify specification section and locations at which materials or equipment are to be installed.
1. Reproductions of Contract Drawings as Shop Drawings are strictly PROHIBITED.
- G. Shop drawings, product data and samples shall be accompanied by an electronic transmittal letter containing project name, Contractor's name, number of drawings, and samples, titles and other pertinent data. Transmittal shall bear signature of the Contractor as evidence he checked same and found them in conformance with the Contract Documents.
- H. The Construction Manager shall review, approve and submit, with reasonable promptness and in such sequence as to cause no delay in the work or in the work of the Owner or any separate Contractor, all shop drawings, product data and samples required by the Contract Documents.
- I. By approving and submitting shop drawings, product data and samples, the Contractor represents he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and has checked and coordinated the

information contained within such submittals with the requirements of the work and the Contract Documents.

- J. The Contractor shall not be relieved of responsibility for deviation from the requirements of the Contract Documents by the Architect's acceptance of shop drawings, product data or samples, unless the Contractor has specifically informed the Architect and Owner in writing of such deviation at time of such deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the shop drawings, product data or samples by the Architect's acceptance thereof.
- K. Direct specific attention, in writing or on re-submitted shop drawings, product data or samples, to revisions other than those requested by the Architect on previous submittals.
- L. No portion of the work requiring submission of a shop drawing, product data or sample shall be commenced until the submittal has been accepted by the Architect. Such portions of work shall be in accordance with approved submittals.
- M. The Architect will review shop drawings, product data and samples.
- N. Contractor is responsible for obtaining and distributing required prints of shop drawings, product data, and samples, to his subcontractors and material suppliers; after as well as before final approval. Make prints of reviewed shop drawings from transparencies which carry Architect's appropriate stamp.
- O. Obtain copies of all shop drawings, product data and samples submitted to date and accepted from other Contractors.
- P. Shop drawings both large and small format shall be electronically organized for submission in complete sets.
- Q. Submit all specified submissions for a division of work at one time in complete packages unless arrangements are made beforehand. Incomplete and multiple submittals will be rejected.

1.06 USE OF CONTRACT DRAWINGS

- A. The Architect may provide electronic CAD files of Drawings to the Contractor and Sub-Contractors, upon request, for use as backgrounds in preparation of Contractor's Shop Drawings for this Project ONLY, for the fee stated herein.
- B. The Architect will provide electronic base files of Floor Plans, Reflected Ceiling Plans, and Elevations ONLY. Wall sections and details WILL NOT be released. Contract document files WILL NOT be released.
- C. The Contractor shall read, endorse, and return the Architect's waiver form, "Authorization for Release of CAD Files", and pay a fee to the Architect, prior to release of any electronic CAD files by the Architect. A copy of the Waiver Form is included at the end of this Section.
 - 1. Fee for Release of CAD files for EACH DISCIPLINE shall be \$100.00 for the first sheet, and \$50.00 for each additional sheet file, not to exceed \$500.00.
 - 2. EXCEPTION, Fire Suppression System CAD files will be released at NO COST.
- D. The release of electronic CAD files by the Architect is solely for the convenience of the Contractor. The Architect shall not be responsible for the completeness or accuracy of these electronic CAD files. These electronic CAD files are not necessarily updated to reflect subsequent Bid Packages, addenda, bulletins, or other project revisions.

1.07 ARCHITECT'S ACTION

- A. Except for submittals for the record, for information and similar purposes, where action and return on submittals is required or requested, Architect will review each submittal, mark to indicate action taken, and return promptly.
 - 1. Compliance with specified characteristics is Contractor's responsibility, and not considered part of Architect's review and indication of action taken.
 - 2. Acceptance does not authorize any change in the Contract Documents unless specifically stated in a separate letter or Change Order.

- B. Action Stamp: Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked to indicate the action taken.
1. Review Stamp Terminology: Correction or comments made on shop drawings during this review do not relieve contractor from compliance with requirements of the Drawings and Specifications. This review is conducted only for the confirmation of general conformance with the design concept of the Project and general compliance with the information given in the Contract Documents.
 - a. The Contractor is responsible for:
 - 1) Confirming and correlating all quantities and dimensions.
 - 2) Selecting fabrication processes and techniques of construction.
 - 3) Coordinating his work with that of all other trades.
 - 4) Performing his work in a safe and satisfactory manner.
 2. Design Build Review Stamp Terminology: Review of information on these documents is made to insure compliance with the architectural design concept of this project. Comments and/or corrections refer to aesthetic issues only with no intent to review or alter engineering design content. Design build contractor shall coordinate his work with that of all trades.
 3. Submittal Action:
 - Reviewed - where no comment made.
 - Reviewed with Comments - where comments indicated on submittal qualifying, modifying, or otherwise changing it; however, submittal can be used for ordering, fabrication and erection.
 - Revise and Resubmit - Submittal not in conformance; revise and resubmit.
 - Submit Record Copy - Provide record copy of submittal.
 - Rejected - Submittal not required or not in conformance. Revise and resubmit.
- C. Other Action: Where a submittal is primarily for information or record purposes, for special processing or other Contractor activity, the submittal will be returned, marked "Action Not Required".

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

AUTHORIZATION FOR RELEASE OF AUTOCAD FILES AS BACKGROUND FOR DEVELOPING DESIGN- BUILD/SHOP DRAWINGS

PROJECT _____

N/S PROJECT NO. _____
CONTRACTOR _____
ADDRESS _____
DOCUMENTS _____
TOTAL FEE _____
DATE ISSUED _____

Neumann/Smith Architecture hereby issues the designated AutoCAD base files for use by the designated Contractor ONLY, for use as backgrounds in the preparation of Contractor's Design-Build/Shop Drawings, as a means to expedite their submittal process. The Contractor shall not copy or distribute these documents in any form to others or use them for other projects without the written consent of Neumann/Smith Architecture.

The ONLY electronic base files available for this process are

Architectural Floor Plans, Reflected Ceiling Plans, and Elevations
Structural Floor Plans
Mechanical Floor Plans
Electrical Plans

Wall Sections and Details WILL NOT be released.

Contract Document electronic drawing files WILL NOT be released.

The Fee for EACH DISCIPLINE for the cost of preparation and translation of these AutoCAD files is \$100.00 for the first file, and \$50.00 for each additional file, not to exceed \$500.00 per discipline. There are no refunds.

Adhere to the following procedure to obtain designated AutoCAD files.

Designated Contractor to fax or E-mail request for specific drawings to Construction Manager/General Contractor. The Construction Manager/General Contractor will forward request to Neumann/Smith Architecture Project Manager.

Request submitted directly by Contractor/Subcontractor to Neumann/Smith Architecture will be returned without processing.

Neumann/Smith Architecture will review requested list of drawings and issue invoice for total amount due directly to the Designated Contractor via E-mail or fax.

Upon receipt of returned invoice with total amount due, Neumann/Smith Architecture will process request and send AutoCAD files, via E-mail or disc, within 5 working days, dependent on volume, directly to designated Contractor. Contractor shall identify Neumann/Smith Architecture Project Number on returned invoice for processing.

It is acknowledged these AutoCAD files were prepared by Neumann/Smith Architecture solely as a convenience for the recipient and that Neumann/Smith Architecture cannot be held responsible for the completeness or accuracy of the information conveyed on these AutoCAD files. It is further acknowledged these AutoCAD files are not presented as being copies of project contract documents otherwise transmitted to the above mentioned recipient. This information has not necessarily been updated to reflect subsequent Bid Packages, Addenda, Bulletins or other project revisions.

The designated Contractor assumes all liability for the use of these files for shop drawing documentation, coordination and all other purposes. It shall be understood that the recipient will, to the fullest extent permitted by law, hold harmless and indemnify Neumann/Smith Architecture and/or its consultants from all claims, liabilities, losses, damages and costs, including attorney's fees, arising out of or in any way connected with any use, modification or misuse by the recipient or its affiliates of the electronic media released.

The Contractor shall have a legally authorized individual endorse both copies of this statement. Retain one copy and return the other. Neumann/Smith Architecture will prepare backup files of the transmitted information being sent for record purposes.

Recipient is advised to check all electronic media for computer viruses before loading the files. Recipient is fully responsible for intercepting and disabling viruses, if any, that may be inadvertently transmitted with the electronic files and hereby agrees to indemnify and hold Neumann/Smith Architecture harmless from and against all claims of any type or nature asserted by recipient or any third party as a result of viruses inadvertently transmitted with the electronic media.

AUTHORIZATION

NEUMANN/SMITH ARCHITECTURE

NAME

DATE

TITLE

AUTHORIZATION ACCEPTANCE

CONTRACTOR

NAME

DATE

TITLE

COPIES:

OWNER'S REPRESENTATIVE

GENERAL CONTRACTOR/CONSTRUCTION MANAGER

CLIENT'S REPRESENTATIVE

© 2011 Neumann / Smith Architecture, Inc.

SECTION 01 4216 - DEFINITIONS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. This Section defines various terms used throughout the Contract Documents.

1.03 DEFINITIONS

- A. Addendum: An Addendum is a written and/or graphic instrument issued by the Owner's Representative prior to award of Contract which modifies or interprets the Bidding Documents by additions, deletions, clarifications, or corrections. The Bidding Documents for the original Work shall govern the work described therein, unless modified by the Addendum. All costs or credits due to the Addendum shall be incorporated into the Bidder's Proposal Form for Addenda issued prior to the Owner's receipt of Bids, and by letter on Bidder's letterhead modifying Bid Form amounts for Addenda issued after Owner's receipt of Bids. Letter shall be signed by, and as for the original Bid Form submission.
- B. Alternate Price: A variation to the Base Bid amount stated on the Proposal Form to cover a variation in the Contract Requirements. If the Alternate Price is accepted by the Owner, the variation becomes a part of the Contract, and the amount quoted is then added to, or deducted from, the Lump Sum Base Bid amount to determine the Contract Sum. Variations may include a change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
- C. Awardee: A Bidder selected to enter into a Contract with the Owner for Work included under the Bidder's Proposal, until such time as he is awarded a Contract and becomes a Subcontractor to the Construction Manager.
- D. Base Bid: The Bid amount before any Alternate Price or Substitution is considered.
- E. Bid: As used in the Instructions to Bidders: A Proposal prepared and submitted as required herein.
- F. Bidding Documents: A term used for the Advertisement, Instruction to Bidders, Proposal Form, Contract, Bid Security, and the proposed Contract documents including any and all addenda.
- G. Bulletin: A written and/or graphic instrument issued by the Owner's Representative, after award of the Contract, used to solicit a proposal for a change in the Work which may affect cost and/or time. The Contract Documents for the original Work Shall Govern the work described unless modified by the Bulletin. A Bulletin is NOT AN ORDER to do the work, But a request to submit a quotation. Changes to the Contract Amount or time shall be adjusted by a Change Order.
- H. Clarification: A written and/or graphic instrument issued by the Owner's Representative after Award of Contract to describe certain clarifications of or deviations from, the Contract documents not affecting cost or time. A Clarification IS AN ORDER to do the Work.
- I. Complete: Where used, it shall mean "Complete with connections, supports, attachments, and incidental items necessary for a finished and properly operating assembly or operation".
- J. Connect: The term shall mean "to bring service(s) to point of installation and make final connections of the service(s) to the installed equipment, and provide miscellaneous auxiliary appurtenances necessary to make operable for its intended use."
- K. Construction Issue: A written and/or graphic instrument issued by the Owner's Representative to provide the Construction Manager a method for obtaining expedient additions, revisions, or clarifications of Drawings and Specifications during the Design and Construction process.
- L. Contract Documents: Drawings and Specifications setting forth in detail the requirements for construction of the Project.

- M. Days and/or Calendar Days: Days listed on the calendar, including Saturdays, Sundays, and legal holidays where the Project is located.
- N. Directed: Terms such as “directed”, “requested”, “authorized”, “selected”, “approval”, “satisfactory”, “accepted”, “required”, and “permitted” are used without reference to specific entity, they shall mean “as directed by the Architect or Construction Manager”, and similar phrases. However, no implied meaning shall be interpreted to extend the Owner’s, Architect’s, or Construction Manager’s responsibility into the Contractor’s area of construction supervision, administration, means, or methods.
- O. Drawing: Plans and detail drawings, both large and small scale, furnished by the Architect for the purpose of giving instructions and showing the Work to be done.
- P. Experienced: Unless otherwise defined in the technical specifications, means having successfully completed a minimum of 5 previous Projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with the requirements of authorities having jurisdiction.
- Q. Field Order: A directive to make changes in the Work that is issued by the Construction Manager. Contractual obligations are the same as those for a Construction Change Directive.
- R. Furnish: To supply (only) to another party for their use or installation, including cost of delivery to the jobsite.
- S. Hours of Work: Standard hours of work for the Project shall be proposed by the Subcontractor, subject to approval of the Construction Manager, and shall be for all standard working days. Hours of work other than these “standard hours of work” will be considered “premium time hours” and shall include, if any, cost penalty. Work to be performed on “premium time hours” requires written permission from the Owner’s representative and shall be requested a minimum 48 hours prior to such need.
- T. Indicated: Graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in specifications, and similar requirements in the Contract Documents. Where terms such as “shown”, “noted”, “scheduled”, and “specified” are used, it is to help locate the reference. No limitation on location is intended except as specifically noted.
- U. Install: To unload, temporarily store, distribute, uncrate, unpack, assemble, erect, and anchor into the intended final positions. The installer shall provide all miscellaneous hardware and supplies required to anchor and support securely, connect, clean-up, and dispose of rubbish.
- V. Installer: The Contractor or entity engaged by the Contractor, as an employee, subcontractor, or contractor of lower tier for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
- W. Not-In-Contract / NIC: Work not included in this Contract.
- X. Owner’s Representative: The Construction Manager is to act in the Owner’s behalf with regard to the work used in reference hereto.
- Y. Packaged Equipment: Equipment or Product that is complete with all integral components, including, but not limited to, piping, conduit, wiring, main power disconnect, starter, control transformer, relays, and controls fully mounted and completely interconnected ready for installation at final location and to receive final connection of mechanical and electrical services. For shipping of “Packaged Equipment” too large for completed assembly, the assembly may be “broken down” into shippable subassemblies requiring only minimal reassembly, refastening, reconnection, etc. Any piping and/or electrical connections required between subassemblies shall be provided with quick-connect fittings which do not require special tools to secure the connections.
- Z. Per: “in accordance with the requirements of”.
- AA. Plan(s): The terms shall read to mean “Contract Drawings”.
- AB. Product: Materials, systems, and equipment.

- AC. Project: The total construction of which the work performed under the Contract Documents may be the whole or a part.
- AD. Project Manual: The volume(s) assembled for the Work which may include Introductory Information, Bidding Requirements, Contract Forms, Conditions of the Contract, the Specifications, and Reference Materials.
- AE. Project Site / Site: The space available for the Contractor for performance of construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project Site is shown on the drawings and may or may not be identical with the description of the land upon which the Project is to be built.
- AF. Provide: To furnish, install, and connect, complete and ready for intended use.
- AG. Regulations: Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- AH. Request for Information (RFI): A request for information by the Contractor to the Architect of Record for clarification of intent of any portion of the Contract Documents after the Award of Contract and during the construction of the Project.
- AI. Review: Where used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the duties and responsibilities of the Architect as stated in the General Conditions and Supplementary Conditions. Such review shall not release the Contractor from responsibility to fulfill Contract requirements unless otherwise provided in the Contract Documents.
- AJ. Supplier: As used herein; A firm or organization furnishing or delivering products directly to the jobsite, and because of such direct delivery, could be construed under the lien laws of the State in which the work is being performed as having lien rights against funds due the Contractor. Suppliers of materials and equipment, delivering to Contractor or Subcontractor on an open account basis and not having lien rights on the Work, will not be considered suppliers within the meaning of the Contract Documents.
- AK. Testing Agency: An independent entity engaged to perform specific inspections or tests, either at the project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.
- AL. Trades: The use of titles such as "Carpentry" is not intended to 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 tradespersons of the corresponding generic name.
- AM. Trade Specialists: Certain Sections of the Specifications require that specific construction activities be performed by specialists who are recognized experts in the operations to be performed. The Specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no choice or option.
- AN. Unit Price: An amount proposed by Bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to, or deducted from, the Contract Sum by appropriate modification, if the estimated quantities of Work required by the Contract Documents are increased or decreased.
- AO. Work: (Capitalized) The construction services required by the Contract Documents, whether completed or partially completed, and including all other labor, materials, equipment and other services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or part of the Project.
- AP. work: (Lower Case) Activity to do or perform something, a specific task being a part or phase of some larger activity, or something that results from a particular manner or method, working, operating, or devising.

AQ. Working Days: Standard working days for the Project shall be all calendar days except Saturdays, Sundays, and legal holidays where the Project is located and shall invoke no cost or time penalties. Working days other than "standard working days" will be considered "premium working days" and shall include, if any, cost penalty. Work to be performed on "premium working days" requires written permission from the Owner's Representative, and shall be requested a minimum 48 hours prior to such requirement.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 6000 - COMMON PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Administrative and procedural requirements governing the Contractor's selection of products and their use in the Project.
- B. General product requirements.
- C. Transportation, handling, storage and protection.
- D. Procedures for Owner-supplied products.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.03 DEFINITIONS

- A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Base and Optional Manufacturers: Acceptable manufacturers are often listed in Part 2 of a specification section. A particular manufacturer and product are often listed as a "Design Standard" or "Basis of Design".
 - 1. The "Design Standard" or "Basis of Design" is the manufacturer of the specific product used as the basis for design.
 - 2. The other manufacturers listed are "Optional" manufacturers, and manufacture a product similar to the specific product used as the design basis. Listing of a manufacturer indicates acceptance of that manufacturer as a supplier of the product, without a substitution, but only if the "optional" manufacturer's product complies with the specified requirements, including the salient qualities provided by the "Design Standard" manufacturer's product. Salient qualities include, but are not necessarily limited to the following:
 - a. Purpose and function.
 - b. Material and finish.
 - c. Strength, durability and other applicable physical properties.
 - d. Compatibility and performance attributes for the indicated application.
 - e. Capacity and operating characteristics, where applicable.
 - f. Size and configuration to the extent required for fit with adjoining and adjacent conditions and within spatial limitations.
 - g. Appearance, including exposed dimensions, profile, texture, pattern and color, where visible to personnel in a finished space or from the exterior.
 - 3. The Contractor is responsible for costs to provide any dimensional, structural, utility and other related adjustments required to fit an "Optional" manufacturer's product into the Work.

1.04 SYSTEM PERFORMANCE REQUIREMENTS

- A. Generally provide products, materials and equipment that:
 - 1. Comply with specified standards and related requirements.
 - 2. Comply with requirements for size, make, type and quality specified, or as specifically directed in writing by Architect.
 - 3. Where manufactured and fabricated products:
 - a. Design, fabricate and assemble per best engineering and shop practices.
 - b. Manufacture like parts of duplicate units to standard sizes and gages, and to be interchangeable.
 - c. Provide two or more items of the same kind as identical and by the same manufacturer.

- d. Provide products that are suitable for service conditions.
- e. Provide equipment capacities, sizes and dimensions shown or specified unless variations are specifically authorized in writing.
- 4. Do not use products, materials or equipment for any purpose other than that for which they are designed unless otherwise indicated or specified.

1.05 SUBMITTALS

- A. Product List Schedule: Prepare a schedule showing products specified in tabular form acceptable to Architect. Include generic names of products required. Include manufacturer's name and proprietary product names of each item listed.
 - 1. Coordinate product list schedule with Contractor's Construction Schedule and Schedule of Submittals.
 - 2. Form: Prepare product listing schedule with information on each item tabulated under the following column headings:
 - a. Related Specification Section number.
 - b. Generic name used in Contract Documents.
 - c. Proprietary name, model number and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.
 - 3. Initial Submittal: Within 30 days after date of commencement of Work, submit 3 copies of an initial product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.
 - 4. Completed Schedule: Within 60 days after date of commencement of Work, submit 3 copies of completed product list schedule. Provide written explanation for omissions of data, and for known variations from Contract requirements.
 - 5. Architect's Action: Architect will respond in writing to the Contractor within 2 weeks of receipt of completed product list schedule. No response within this time period constitutes no objection to listed manufacturers or products, but does not constitute a waiver of the requirement that products comply with Contract Documents.
- B. Manufacturer's Instructions: When Contract Documents require installation of work to comply with manufacturer's printed instructions, obtain and distribute copies of such including two copies to Architect and one copy to Owner.
 - 1. Maintain one set of complete instructions at job site during installation and until completion.

1.06 QUALITY ASSURANCE

- A. Source Limitations: To the greatest extent possible, provide products of the same kind from a single source.
- B. Compatibility of Options: When Contractor is given option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver, store and handle products per manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
 - 1. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged or sensitive to deterioration, theft or other losses.
 - 2. Deliver products to site in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storage, unpacking, protecting and installing.

3. Store products at site in manner to facilitate inspection and measurement of quantity or counting of units.
4. Store heavy materials away from Project structure in manner that will not endanger supporting construction.
- B. Arrange deliveries of products in accordance with construction schedules. Coordinate to avoid conflict with work and conditions at site.
 1. Deliver products in undamaged condition in manufacturer's original containers or packaging with identifying labels intact and legible.
 2. Immediately on delivery inspect shipments to assure compliance with requirements of Contract Documents and accepted submittals, quantities are correct, and products are properly protected and undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.
- D. Store products per manufacturer's instructions with seals and labels intact and legible.
 1. Store products subject to damage by elements in weather-tight enclosures.
 2. Maintain temperature and humidity within ranges required by manufacturer's instruction.
- E. Exterior Storage: Store fabricated products above ground on blocking or skids to prevent soiling or staining. Cover products subject to deterioration with impervious sheet covers and provide adequate ventilation to avoid condensation.
- F. Arrange storage in manner to provide easy access for inspection. Make periodic inspections of stored products to assure products are maintained under specified conditions and free from damage or deterioration.

PART 2 PRODUCTS

2.01 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with Contract Documents, are undamaged, and unless otherwise indicated, unused at time of installation.
 1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for intended use and effect.
- B. Product Selection Procedures: Product selection is governed by Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
 1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide product indicated. No substitutions will be permitted.
 2. Semi-proprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
 - a. Where one product and manufacturer is named as the "Design Standard" and other manufacturers are specified by name, other manufacturer's equivalent product may be acceptable, subject to compliance with Contract requirements, including specifications of the product designated as the "Design Standard", as determined by Architect.
 - b. Specific equivalent manufacturer's products shall be identified in the initial submittal period.
 3. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements. Use products of listed manufacturers but verify compliance with specified characteristics.
 4. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products with these requirements, and are

recommended by manufacturer for application indicated. Verify proposed product complies with performance requirements.

- a. Manufacturer's recommendations may be contained in published product literature or by manufacturer's certification of performance.
5. Compliance with Standards, Codes and Regulations: Where Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with standards, codes or regulations specified.
6. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
7. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.

2.02 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 TRANSPORTATION AND HANDLING

- A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- B. Transport and handle products in accordance with manufacturer's instructions.
- C. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- D. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

3.02 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground.
- E. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Prevent contact with material that may cause corrosion, discoloration, or staining.
- I. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- J. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

3.03 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned

with other Work. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

- B. Handle, install, connect, clean, condition and adjust products per manufacturer's instructions and in conformance with specified requirements.
 - 1. Should project conditions or specified requirements conflict with manufacturer's instructions, consult with Architect for further direction.
 - 2. Do not proceed with work without clear instructions.
- C. Protection after Installation: Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove when no longer needed.

END OF SECTION

SECTION 01 7329 - CUTTING AND PATCHING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Administrative and procedural requirements for cutting and patching.

1.03 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing cutting and patching procedures well in advance of time cutting and patching will be performed and request approval to proceed when the following conditions are involved.
 - 1. Structural integrity of any element of the Project.
 - 2. Integrity of weather exposed or moisture sensitive element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate contractor.
- B. Cutting and patching proposal shall include the following information, as applicable, in the proposal:
 - 1. Identification of Project.
 - 2. Location and description of affected work.
 - 3. Reason for cutting, patching, and/or alteration requirement and anticipated results in terms of changes to existing construction. Include in the building's appearance and other significant visual elements.
 - 4. Alternatives to cutting, patching, and/or alteration requirement.
 - 5. Effect on work by Owner or separate contractor.
 - 6. Written permission of affected separate contractors.
 - 7. Date and time work will be executed.
 - 8. Products to be used and firms or entities that will perform the work.
 - 9. Utilities that will be disturbed or affected. Indicate how long service will be disrupted.
 - 10. Where cutting and patching involves reinforcement of structural elements, furnish details and engineering calculations to show reinforcement is integrated with original structure.
 - 11. Approval by Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the work found to be unsatisfactory.

1.04 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in manner that would reduce their load-carrying capacity or load-deflection ratio.
- B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in manner that would result in reducing their capacity to perform as intended, or result in increased maintenance or result in decreased operational life or safety.
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in manner that would, in the Architect's opinion, reduce the building's aesthetic qualities or result in visual evidence of cutting and patching.
 - 1. Remove and replace work cut and patched in a visually unsatisfactory manner.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Use materials identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces

to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding if unsafe or unsatisfactory conditions are encountered.
 - 1. Meet at Project Site with parties involved in cutting and patching before proceeding, including mechanical and electrical subcontractors. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
 - 2. Start of cutting and patching work will be construed as Contractor's acceptance of conditions within a particular area.

3.02 PREPARATION

- A. Temporary Support: Provide temporary support of work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
 - 1. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
 - 2. Avoid cutting existing pipe, conduit or ductwork serving the building but scheduled to be removed or relocated until provisions have been made to bypass them.

3.03 CUTTING AND PATCHING

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent cutting and patching required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction using methods least likely to damage adjoining construction being retained.
 - 1. In general where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.
 - a. Pneumatic tools are not allowed.
 - b. Do not pound or make openings with hammers.
 - 4. By-pass utility services such as pipe or conduit before cutting where services are shown or required to be removed, relocated or abandoned.
 - a. Cut off pipe or conduit in walls or partitions to be removed.
 - b. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
 - 1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 - 2. Restore finishes of patched areas and extend finish restoration into retained adjoining construction in manner to eliminate evidence of patching and refinishing.
 - 3. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces to provide an even surface of uniform color and appearance.

Remove existing floor and wall finish materials and replace with new materials, if necessary, to achieve uniform color and appearance.

- a. Where patching occurs in a smooth painted surface extend final paint coat over entire unbroken area containing the patch to the nearest control joint or change in plane whichever is greater.
4. Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through the work.
5. At penetrations of fire-rated walls, partitions, ceilings, or floor construction, completely seal voids with UL rated firestopping systems to restore integrity of fire-rated element. Provide escutcheon plates where exposed to view.
6. Patch spray-applied fireproofing to restore integrity of fire-rated elements at locations where fireproofing has been removed during demolition and/or for attachment of new construction.

3.04 CLEANING

- A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Completely remove paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01 7423 - FINAL CLEANING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Administrative and procedural requirements for final cleaning at Substantial Completion.
 - 1. Additional special cleaning requirements for specific elements of Work are specified in individual Section in Divisions 02 through 49.

1.03 QUALITY ASSURANCE

- A. Environmental Requirements: Conduct cleaning and waste disposal operations in compliance with local laws and ordinances. Comply with federal and local environmental and anti-pollution regulations.
 - 1. Do not dispose of volatile wastes such as mineral spirits, oil or paint thinner in storm or sanitary drains.
 - 2. Burning or burying of debris, rubbish or other waste material on premises will not be permitted.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Use cleaning material and agents recommended by the manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents potentially hazardous to health or property, or might damage finish surfaces.

PART 3 EXECUTION

3.01 FINAL CLEANING

- A. Provide final cleaning operations when required. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of work to condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's instructions for cleaning operations.
- B. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion for the entire Project or for a portion of the Project.
 - 1. Clean Project Site, including landscape development areas of rubbish, waste materials, litter and foreign substances. Sweep paved areas to broom clean condition; remove stains, chemical spills, and other foreign deposits. Rake grounds which are neither planted or paved, to a smooth, even textured surface. Remove stains, spills and other foreign deposits.
 - 2. Remove tools, construction equipment, machinery and surplus materials from the site.
 - 3. Clean interior hard-surfaced finishes to a dirt-free condition, free of dust, stains, films and similar foreign substances.
 - 4. Remove debris and surface dust from limited access spaces including plenums, shafts, equipment vaults, and similar spaces.
 - 5. Broom clean concrete floors in unoccupied spaces.
 - 6. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo if required.
 - 7. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch the surfaces.
 - 8. Remove labels that are not permanent labels. Clean all permanent labels.

9. Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces which cannot be satisfactorily repaired or restored, or show visible evidence of repair or restoration. Do not paint over UL and similar labels including mechanical and electrical identification plates.
 10. Wipe surfaces of mechanical and electrical equipment, elevator equipment and similar equipment clean. Remove excess lubrication, paint and other foreign substances.
 11. Clean exposed unpainted ductwork of all foreign matter. Apply coating of Armor All Original Protectant by Armor All/STP Company to surfaces of exposed unpainted ductwork.
 12. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 13. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers and grilles. Clean ducts, blowers and coils if units were operated without filters during construction.
 14. Clean light fixtures, lamps, globes and reflectors to function with full efficiency. Replace burned out bulbs and defective and noisy starters in fluorescent fixtures.
 15. Leave Project clean and ready for occupancy.
- C. Pest Control: Engage an experienced licensed or bonded exterminator to make a final inspection of Project and to rid of rodents, insects and other pests. Comply with regulations of local authorities having jurisdiction.
- D. Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during remainder of construction period.
- E. Compliances: Comply with safety standards and governing regulations for cleaning operations. Remove waste materials from site and dispose of in lawful manner.
1. Where extra materials of value remain after completion of associated construction have become the Owner's property, dispose of these materials to Owner's best advantage as directed.

END OF SECTION

SECTION 01 7800 - CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Administrative and procedural requirements for project closeout.

1.03 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following, listing exceptions in the request:
 - 1. In the Application for Payment that coincides with, or first follows the date Substantial Completion claimed, show 100 percent completion for the portion of Work claimed as substantially complete. Include supporting documentation for completion as required and a statement showing an accounting of change to the Contract Sum. Comply with requirements of the General Conditions.
 - a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction and reasons the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specified warranties, maintenance agreements, final certifications and similar documents as required by the General Conditions.
 - 4. Obtain and submit releases enabling Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
 - 5. Submit project record documents including maintenance manuals, damage or settlement survey, property survey and similar final record information.
 - 6. Deliver tools, spare parts, extra stock and similar items to Owner.
 - 7. Make final changeover of permanent locks and transmit keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 8. Complete start-up testing of systems and instruction of Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from site, along with construction tools, mockups and similar elements.
 - 9. Complete final cleaning requirements including touch-up painting.
- B. Inspection Procedures: On receipt of a request for inspection, Architect will either proceed with inspection or advise Construction Manager of unfilled requirements. Architect will prepare the Certificate of Substantial Completion following inspection, or advise Construction Manager of construction that must be completed or corrected before the certificate will be issued.
 - 1. Architect will repeat inspection when requested and assured the Work has been substantially completed.
 - 2. Results of the completed inspection will form the basis of requirements for final acceptance.
- C. Operating and Maintenance Instructions:
 - 1. Operating instructions shall include necessary printed directions for correct operation, adjustment, servicing, and maintenance of movable parts. Operating instructions shall include complete integration of new systems with existing systems and how they are to operate together, in series, sequence, etc. Also, include a suitable parts list, approved shop drawings, and diagrams showing parts location and assembly.
 - 2. Arrange for each installer of equipment requiring regular maintenance to meet with Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:
 - a. Maintenance manuals.

- b. Record documents.
- c. Spare parts and materials.
- d. Tools.
- e. Lubricants.
- f. Fuels.
- g. Identification systems.
- h. Control sequences.
- i. Hazards.
- j. Cleaning.
- k. Warranties and bonds.
- l. Maintenance agreements and similar continuing commitments.
- 3. As part of instruction for operating equipment, demonstrate the following procedures:
 - a. Start-up.
 - b. Shutdown.
 - c. Emergency operations.
 - d. Noise and vibration adjustments.
 - e. Safety procedures.
 - f. Economy and efficiency adjustments.
 - g. Effective energy utilization.
- D. Upon Architect's approval and prior to issuance of final payments, submit 3 correct and complete copies of maintenance manuals.

1.04 FINAL REVIEW

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following, listing exceptions in request:
 - 1. Submit final payment request with releases and supporting documentation not previously submitted and accepted. Comply with requirements of the General Conditions. Include certificates of insurance for products and completed operations.
 - 2. Submit an updated final statement, accounting for final additional changes to Contract Sum.
 - 3. Submit a certified copy of Architect's final inspection list of items to be completed or corrected, stating each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by Architect.
 - 4. Submit record drawings and similar final record documents.
 - a. Each drawing shall be labeled "Project Record", dated and signed by the Contractor.
 - b. Each project record document shall be labeled "Project Record Document".
 - 5. Submit consent of surety to final payment.
 - 6. Submit evidence of final continuing insurance coverage complying with insurance requirements.
- B. Re-inspection Procedure: Architect will re-inspect Work upon receipt of notice the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to Architect.
 - 1. Upon completion of reinspection, Architect will prepare Certificate of Final Acceptance, or advise Contractor of incomplete Work or of obligations not been fulfilled but required for final acceptance.
 - 2. If necessary, reinspection will be repeated for final acceptance.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 7839 - PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Administrative and procedural requirements for project record documents.
 - 1. Additional project record document requirements are specified in individual Sections in Division 02 through 49.

1.03 DEFINITIONS

- A. Project Record Documents: Contract drawings, specifications, and shop drawings, indicating "As-Built" conditions and actual products selected for use.

1.04 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes, protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for Architect's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark set to show the actual installation where installation varies substantially from Work originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements difficult to measure and record at a later date.
 - 1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of Work.
 - 2. Mark new information important to Owner, but not shown on Contract Drawings or Shop Drawings, including the following:
 - a. Changes made by addenda, change orders, supplemental instructions, or other modifications.
 - b. Significant changes and selections made during the construction process.
 - c. Significant detail not shown in the original Contract Documents.
 - d. Physical measurements locating underground utilities and appurtenances, dimensionally referenced to permanent surface improvements.
 - e. Location of internal utilities and appurtenances concealed in building structure, referenced to visible and accessible features of the building.
 - 3. Note related Change Order numbers, Field Order numbers, and other contract modifications, where applicable.
 - 4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
 - 5. Obtain and pay for a complete set of Mylar auto positive transparencies using the Architect's original reproductions.
 - a. Transfer all corrections, changes and revisions from the job record set to the transparencies and add the legend "Record Drawings Prepared By (name) Contractor" and the date of printing to each transparency.
 - b. Print three complete sets of blueprints. The transparencies and two sets become the property of the Owner, while the Architect will retain the other set.
- C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.

1. Legibly mark and record at each "Product" section of each Specification Section, the description of the actual products installed, including the following:
 - a. Manufacturer's name and product model and number.
 - b. Product substitutions or alternates utilized.
 - c. Changes made by Addenda or Bulletin.
 2. Upon completion of the Work, submit record Specifications to Architect for Owner's records.
- D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from manufacturer's installation instructions and recommendations.
1. Legibly mark each Product Data submittal indicating actual product number and model installed in the Work.
 2. Note related Change Orders.
 3. Markup applicable record drawings and Specifications.
 4. Upon completion of markup, submit complete set of record Product Data to Architect for Owner's records.
- E. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work.
1. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference.
 2. Submit to Architect for Owner's records.
- F. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size.
1. At a minimum, Operation and Maintenance Manuals shall contain:
 - a. Manual index cross referencing specification numbers for each item.
 - b. Operating instructions.
 - c. Emergency instructions.
 - d. Spare parts list.
 - e. Copies of warranties.
 - f. Wiring diagrams.
 - g. Recommended maintenance procedures and "turn around" cycles.
 - h. Inspection and system-test procedures.
 - i. Copies of applicable Shop Drawings.
 - j. Copies of applicable Product data.
 - k. Fixture lamping schedule.
 - l. Maintenance drawings and diagrams.
 - m. Listing of required maintenance materials.
 - n. Precautions against improper maintenance.
 - o. All organized by Specification Section.
 - p. Names and addresses of nearest service outlets, distributors, or factory outlets for each piece of equipment.
 2. Commence preparation of manuals after Shop Drawings and Product Data submittals have been accepted.
 3. Finished manuals shall be heavy-duty loose-leaf type 3-ring binders with hardboard covers and titled tabs identifying each particular portion or item of Work.
 - a. Provide binders with pocket folders for folded sheet information.
 - b. Provide each binder a detailed Table of Contents referring to index tabs.
 - c. Mark appropriate identification on front and spine of each binder.
 4. For each titled item or work portion, manual must provide names, addresses, and phone numbers of the following parties:

- a. Contractor/installer.
 - b. Manufacturer.
 - c. Nearest dealer/supplier.
 - d. Nearest agency capable of supplying parts and service.
5. Each manual label on front cover or spine shall indicate the following information.
 - a. Project name and address.
 - b. Owner's name.
 - c. Name and address of Architect.
 - d. Name and address of Construction Manager.
 - e. Name and address of Contractor.
 - f. Date of Submission.
6. Submit three copies of maintenance manuals to Architect for Owner's records.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

State of Michigan
.gov
719 Griswold St

2012108

Bids and Permit
February 7, 2013

SECTION 02 4119 - SELECTIVE STRUCTURE DEMOLITION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Selective structure demolition work includes, but is not limited to, the following:
 - 1. Demolition and removal of selected portions of the existing building.
 - 2. Patching and repairs.

1.03 SUBMITTALS

- A. Schedule: Submit schedule indicating proposed methods and sequence of operations for selective structure demolition work to Owner's Representative for review prior to commencement of work.
 - 1. Provide detailed sequence of demolition and removal work to ensure uninterrupted occupancy of building.
 - 2. Include coordination for shut-off of utilities, if required.
 - 3. Proposed dust-control and noise-control measures.
- B. Inventory of items to be removed and salvaged.
- C. Inventory of items to be removed by Owner.
- D. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating all refrigerant that was present was recovered and recovery was performed according to EPA regulations.
 - 1. Include name and address of technician and date refrigerant was recovered.
- E. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction that might be misconstrued as damage caused by selective structure demolition operations.
- F. Landfill records indicating receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous waste.

1.04 QUALITY ASSURANCE

- A. Contractor Qualifications: Engage only subcontractors who can demonstrate not less than five years successful experience in work of similar character.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. Standards: Comply with ANSI A10.6 and NFPA 241.

1.05 PROJECT CONDITIONS

- A. Occupancy: The Owner will be continuously occupying spaces immediately adjacent to areas of selective structure demolition. Conduct selective structure demolition work in such manner that will minimize need for disruption of normal operations.
- B. Condition of Structures: Owner assumes no responsibility for actual condition of items to be demolished.
- C. Asbestos is NOT expected to be encountered in the course of this Contract. If any materials suspected of containing asbestos are encountered, do not disturb the materials. Immediately notify the Architect and the Owner.
- D. Partial Demolition: Items indicated to be removed, but of salvable value shall be turned over to the Owner.

- E. Storage or sale of removed items or materials on-site is prohibited.
- F. Protections: Provide temporary barricades and other forms of protection as required to protect Owner's personnel and general public from injury due to selective structure demolition work.
 - 1. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to and from the building.
 - 2. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
 - 3. Protect floors with suitable coverings when necessary.
 - 4. Construct temporary insulated solid dustproof partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip partitions with dustproof doors and security locks if required.
 - a. Temporary dustproof partitions shall be fire-rated where indicated or required by authorities having jurisdiction.
 - 5. Remove protections at completion of work.
- G. Damages: Promptly repair damages caused to adjacent facilities by structure demolition work at no cost to Owner.

1.06 SCHEDULING

- A. Arrange selective structure demolition operations so as not to interfere with Owner's existing on-site operations.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Except as otherwise indicated or approved by Architect, provide materials for selective demolition which will result in equal-or-better work than the work being cut-and-patched in terms of performance characteristics, including visual effect where applicable. Comply with the requirements, and use materials identical to original materials where feasible and where recognized that satisfactory results can be produced thereby.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Prior to commencement of selective structure demolition work, inspect areas in which work will be performed.
- B. When unanticipated mechanical, electrical, and structural elements are encountered, and conflict with intended design, investigate and measure the nature and extent of conflict. Promptly submit a report in writing to Architect.
- C. Survey condition of the building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective structure demolition operations.

3.02 UTILITY SERVICES

- A. Maintain existing utilities indicated to remain in service and protect against damage during selective structure demolition operations.
 - 1. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by the Owner or authorities having jurisdiction.

3.03 PREPARATION

- A. Conduct structure demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around selective structure demolition area.
 - 1. Cover and protect equipment and fixtures from soiling or damage when demolition work is performed in rooms or areas from which such items have not been removed.
- B. Erect and maintain dustproof partitions and closures as required to prevent spread of dust or fumes to occupied portions of the building.

1. Where selective demolition occurs, construct dustproof partitions of minimum 4" studs, 5/8" drywall (joints taped) on occupied side, 1/2" fire-retardant plywood on demolition side, and fill partitions cavity with sound-deadening insulation.
- C. Provide and maintain shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of building to be selectively demolished.
- D. Provide temporary weather protection, during interval between demolition and removal of existing construction, on exterior construction and new construction, to ensure no water leakage or damage occurs to structure or interior areas.

3.04 DEMOLITION

- A. Demolish and remove existing construction only to extent required by new construction and indicated.
- B. Perform selective structure demolition work in a systematic manner. Use such methods as required to complete work indicated on Drawings in accordance with demolition schedule and governing regulations.
- C. Employ only skilled tradesmen to perform selective structure demolition.
- D. Cut work by methods least likely to damage work to be retained and work adjoining. Neatly cut openings and holes square, plumb, and true to size required.
- E. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools.
- F. 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 spaces before starting flame-cutting operations.
 1. Maintain portable fire-suppression devices during flame-cutting operations.
- G. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
- H. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power driven masonry saw or hand tools; do not use power driven impact tools.
- I. Removal of flooring materials shall include all adhesives, setting beds, underlayments, and other materials detrimental to new finished flooring materials.

3.05 PATCHING AND REPAIRS

- A. Promptly patch and repair damaged surfaces caused to adjacent construction by selective structure demolition operations.
- B. Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.
- C. Restore exposed finishes of patched area; and where necessary, extend finish restoration onto retained work adjoining, in manner to eliminate evidence of patching.
- D. Closely match finish and texture of existing adjacent surfaces.
- E. Where selective structure demolition terminates at a surface, finish, or substrate to remain, completely remove all traces of material selectively demolished, including mortar beds. Provide smooth, even substrate transition.
- F. Where patching smooth painted surfaces, extend final coat of paint over entire unbroken surface, after patched and repaired area has received primer and second coat.

3.06 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove debris, rubbish and other materials resulting from demolition operations from building site. Do not allow demolished materials to accumulate on-site. Transport and dispose of materials off-site in legal manner in an EPA-approved landfill.

1. If hazardous materials are encountered during demolition operations, immediately stop work in the area affected and report the condition to the Owner and Architect in writing. If Owner determines the hazardous materials are asbestos or PCB's, do no further work in the area until the materials are either removed or rendered harmless, and the area has been certified safe by appropriate authorities.
2. Burning of removed materials is not permitted on project site.

3.07 CLEAN-UP AND REPAIR

- A. Upon completion of demolition work, remove tools, equipment, and demolished materials from site. Remove protections and leave interior areas broom clean.
- B. Repair demolition performed in excess of that required. Return surfaces to remain to condition existing prior to commencement of selective structure demolition work. Repair adjacent construction or surfaces soiled or damaged by selective structure demolition work.
- C. Clean adjacent portion of the structure and improvements of dust, dirt and debris caused by demolition operations, as directed by the Architect and Owner, or governing authorities. Return adjacent areas to conditions existing prior to start of work.

END OF SECTION

SECTION 03 3514 - POLISHED CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Polished Concrete Floor System for existing supported slab.

1.02 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.03 REFERENCE STANDARDS

- A. ASTM C 1028 - Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
- B. ASTM D 523 - Standard Test Method for Specular Gloss
- C. ASTM E 1155 - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct a preinstallation meeting at least one week prior to the start of the Cast in Place Concrete Work to coordinate requirements of this section affected by the installation of the flatwork with the following parties in attendance.
1. Owners Representative
 2. Architect
 3. Construction Manager
 4. Flatwork Contractor
 5. Polished Concrete Applicator
 6. Testing Laboratory
 7. Other interested parties
- B. Review methods related to concrete flatwork to receive polished concrete finish including but not limited to the following:
1. Physical requirements of completed concrete slab and slab finish.
 2. Locations and timing of Mock-up
 3. Protection of surfaces for finish application
 4. Surface preparation
 5. Application
 6. Repair
 7. Field Quality Control
 8. Cleaning
 9. Protection of Finish system
 10. Coordination with other work
 11. Removal of concrete waste and finish system waste slurry.
- C. Construction Manager shall record discussion, including agreement or disagreement on significant matters. Furnish copies of report to all parties present within 5 days after meeting date.
1. If substantial disagreements exist at conclusion of meeting, determine how disagreements will be resolved, and set date and time to reconvene meeting.
- A. Coefficient of Friction: ASTM C 1028 - Greater than or equal to 0.80 for ramps; greater than 0.60 for all other locations.
- B. Gloss Level: Provide Semi-Gloss sheen finish measured with a gloss meter per ASTM D523.

	Designation	60 degree units	85 degree units
Level 1	Flat	5 maximum	10 maximum

Level 2	Velvet	10 maximum	10 to 35
Level 3	Eggshell	10 to 25	10 to 35
Level 4	Satin	20 to 35	35 minimum
Level 5	Semi-gloss	35 to 70	N/A
Level 6	Gloss	70 to 85	N/A
Level 7	High Gloss	greater than 85	N/A

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide Manufacturers product data sheets on all Products to be used including surface preparation, installation and maintenance instructions..
- C. Selection Samples: Submit two Color samples, 6x6 inch in size, illustrating dye or stain color.
- D. Manufacturer's Qualification Statement.
- E. Manufacturers Certificate: Certify that products of this section meet or exceed specified requirements.
- F. Applicator Certification: Certification by manufacturer that applicator has been trained and certified to apply polished concrete system.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Applicator Qualifications: Company specializing in performing the work of this section with a minimum of 5 successful projects greater than or equal to the size of the specified project and has received training in the proper application of polished concrete system.
- C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.07 MOCK-UP

- A. Provide polished mock-up, 12 feet long by 12 feet wide, illustrating the level of gloss, color(s), transition between colors, surface preparation, control and expansion joint filling, and slip resistance. Demonstrate finishing in the field and at corner and edge conditions.
- B. Locate where directed.
- C. Mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in clean, dry area under cover and elevated above grade in accordance with manufacturers written instructions.

1.09 FIELD CONDITIONS

- A. Ambient Conditions: Do not apply when surface and air temperature are below 40 degrees Farenheit or above 95 degrees farenheit unless otherwise indicated by manufacturer's written instructions.
 - 1. Do not apply when surface and air temperatures are not expected to remain above 40 degrees Farenheit for a minimum of 8 hours after application unless otherwise indicated by manufacturer's written instructions.
- B. Lighting: Permanent lighting or a lighting level of 80 ft candles measured 5 feet from finished floor.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Densifier/Hardener
 - 1. Manufacturers: Subject to compliance with requirements provide one of the following products:
 - a. Advanced Floor Products; RetroPlate 99 system
 - b. L&M Construction Chemicals; FGS Permashine system (FGS Hardener Plus)
 - 2. Design Standard: _____.
- B. Oil and Stain resistant/UV Protective top coat:
 - 1. Manufacturers: Subject to compliance with requirements provide one of the following:
 - a. Advanced Floor Products; RetroPel
 - b. L&M Construction Chemicals; Petrotex
- C. Aggregate relief: Grind concrete to expose aggregate. Match Architect's sample/mock-up.
- D. Maintenance/cleaner: Provide manufacturers recommended maintenance cleaner containing densifying agent for on going maintenance of floor.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Verify that the following are met by the concrete slab prior to application of finish:
 - 1. Concrete has cured a minimum of 45 days, longer as required by product manufacturers.

3.02 PREPARATION

- A. Protect all adjacent surfaces from damage from polishing operations.
- B. Clean all dirt, dust, oil, grease and other contaminants from surface that interfere with penetration and performance of specified finish, using cleaners approved by densifier/hardener manufacturer.
- C. Remove all sealers, waxes, coatings, floor coverings, mastics, and other surface contaminants.
- D. Remove all curing compounds using hardener/densifier manufacturers recommended cure remover.
- E. Seal movement joints in sequence recommended by sealer/hardener manufacturer. Refer to Section 07 9200 Joint Sealants.
- F. Patch and repair all cracks, voids, defects and damaged areas in surface as approved by Architect. Allow repair materials to cure completely prior to application of product. Ensure patching and repair compounds are compatible with densifier/hardener and will comply with the performance requirements of floor upon completion of finish.

3.03 APPLICATION

- A. Apply in accordance with manufacturer's written instructions.
- B. Diamond grind concrete using floor densifier/hardener manufacturers recommended grinding machinery.
 - 1. Grind and densify floor using floor densifier/hardener manufacturers recommended number of passes, direction of passes, grit level, sequence of grinding/densifier application, number of applications of hardener to achieve specified gloss level and aggregate relief.
 - 2. Apply hardener/densifier in accordance with hardener/densifier manufacturers written instructions. Clean floor between stages as recommended by densifier/hardener manufacturer

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.

- B. Provide manufacturer's field representative to observe examination of substrate, grinding and polishing, and application of products.
- C. Test for gloss level and co-efficient of friction in accordance with ASTM D523 and ASTM C1028.

3.05 CLEANING

- A. Clean site of all unused product, residues, rinse water, wastes, and effluents in accordance with requirements of authorities having jurisdiction.

3.06 PROTECTION

- A. Protect polished floor from subsequent construction operations.
- B. Protect all concrete slabs indicated on Room Finish Schedule to be sealed concrete as follows:
 - 1. Sweep up all grit and debris immediately. Do NOT use oil based sweeping compounds.
 - 2. Use cleaner approved by sealer/hardener manufacturer for removing fine dust and grime on a daily basis. Avoid harsh chemicals.
 - 3. Report all spills to Construction Manager. Remove spills immediately.
 - 4. Do not eat or drink on slab.
 - 5. Remove isolated staining with specialty cleaner approved by sealer/hardener manufacturer.
 - 6. Get authorization from Construction Manager to operate equipment on the slab. Diaper all equipment and protect slab with absorbent drop cloth when working on slab.
 - a. Use non-marking tires on all equipment. Inspect tires and remove embedded debris that may scratch slab.
 - 7. Store and charge materials and equipment in designated areas only. Construction Manager shall select location to minimize soiling and damage to slab to remain exposed.
 - 8. Use temporary, breathable protective coverings as needed for access. Remove coverings immediately after work is complete.
- C. Do not permit traffic over unprotected floor surface.

END OF SECTION

SECTION 05 7500 - DECORATIVE FORMED METAL

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Miscellaneous components for Architectural Woodwork.

1.03 RELATED SECTIONS

- A. Section 06 4023 - Interior Architectural Woodwork.

1.04 REFERENCES

- A. AA DAF-45 - Designation System for Aluminum Finishes; The Aluminum Association, Inc.; 2003.
- B. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; American Architectural Manufacturers Association; 1997.
- C. ASTM A 480 - General Requirements for Flat-Rolled Stainless and Heat Resisting Steel Plate, Sheet and Strip; 2011a
- D. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2006.
- E. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2005.
- F. ASTM B 429/B 429M - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube; 2006.
- G. ASTM B 483/B 483M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Tubes for General Purpose Applications; 2003.
- H. AWS D1.1/D1.1 M - Structural Welding Code - Steel; American Welding Society; 2006.
- I. AWS D1.2/D1.2 M - Structural Welding Code - Aluminum; American Welding Society; 2003.

1.05 PERFORMANCE REQUIREMENTS

- A. Structural Performance of Guardrails: Provide guardrails per ASTM E 985 for structural performance, based on testing per ASTM E 894 and ASTM E 935.
- B. Thermal Movements: Provide ornamental metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.06 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: For each product used in ornamental metal, including finishing materials and methods.
- C. Shop Drawings: Show fabrication and installation of ornamental metal. Include plans, elevations, component details, and attachments to other Work. Indicate materials and profiles of each ornamental metal member, fittings, joinery, finishes, fasteners, anchorages, and accessory items.

1. Include setting drawings, templates, and directions for installing anchor bolts and other anchorages.
- D. Samples: Color showing full range of color and other finish characteristics available for each item indicated below:
 1. Ornamental metal with powder coat finish.
- E. Samples for Verification: For each profile and pattern of fabricated metal and for each type of metal finish required, prepared on metal of same thickness and alloy indicated for the Work. If finishes involve normal color and texture variations, include sample sets, consisting of two or more units, showing the full range of variations expected.
 1. Include 6-inch-long samples of linear shapes.

1.07 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing ornamental metal similar to this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

1.08 DELIVERY, STORAGE, AND PROTECTION

- A. Store ornamental metal inside a well-ventilated area, away from uncured concrete and masonry, and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.

1.09 COORDINATION

- A. Coordinate installation of anchorages for ornamental metal items. Furnish Setting Drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Provide metals free from surface blemishes where exposed to view in finished unit. Exposed-to-view surfaces exhibiting pitting, seam marks, roller marks, stains, discolorations, or other imperfections on finished units are not acceptable. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes.
- B. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with the requirements indicated below.
 1. Sheet and Plate: ASTM B 209.
 2. Extruded Bars, Rods, Shapes, and Tubes: ASTM B 221.
 3. Extruded Structural Pipe and Tubes: ASTM B 429.
 4. Drawn Seamless Tubes: ASTM B 483.
 5. Welding Rods and Bare Electrodes: AWS A5.10.
- C. Welding Electrodes and Filler Metal: Type and alloy of filler metal and electrodes as recommended by producer of metal to be welded, per applicable AWS specifications, and as required for color match, strength, and compatibility in fabricated items.
- D. Fasteners: Use fasteners of same basic metal as fastened metal, unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.
 1. Provide concealed fasteners for interconnecting ornamental metal components and for attaching them to other work, unless exposed fasteners are unavoidable.
- E. Anchors and Inserts: Provide anchors of proper type, size, material for type of loading and installation condition shown, as recommended by manufacturer, unless otherwise indicated. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors.

2.02 FABRICATION

- A. Form ornamental metal to required shapes and sizes, with true curves, lines, and angles. Provide components in sizes and profiles indicated, but not less than needed to comply with structural performance.

- B. Provide necessary rebates, lugs, and brackets to assemble units and to attach to other work. Drill and tap for required fasteners, unless otherwise indicated. Use concealed fasteners where possible.
- C. Comply with AWS for recommended practices in shop welding. Provide welds behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded joints of all flux, and dress all exposed and contact surfaces.
- D. Shear and punch metals cleanly and accurately. Remove burrs.
- E. Mill joints to a tight, hairline fit. Cope or miter corner joints. Form joints exposed to weather to exclude water penetration.
- F. Finish exposed surfaces to smooth, sharp, well-defined lines and arris.
- G. Assemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- H. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure ornamental metal fabrications rigidly in place and to support indicated loads.

2.03 MISCELLANEOUS ALUMINUM COMPONENTS

- A. Coordinate miscellaneous aluminum components with Section 06 4023 - Interior Architectural Woodwork.
- B. Provide components in sizes and profiles indicated, but not less than that needed to comply with requirements indicated for structural performance.
- C. Drill and tap for required fasteners, unless otherwise indicated. Use concealed fasteners where possible.
- D. Assemble items in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated assembly.
- E. Nonwelded Connections: Fabricate components to interconnect members with concealed mechanical fasteners and fittings, unless otherwise indicated. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
 - 1. Bolts, Nuts, and Washers: Type 304 stainless-steel.
- F. Welded Connections: Fabricate components for connecting members by welding. Cope components at perpendicular and skew connections to provide close fit, or use fittings designed for this purpose. Weld connections continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove flux immediately.
 - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

2.04 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

2.05 ALUMINUM FINISHES

- A. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.
- B. Power Coated Finish: Thermosetting Polyester powder coating applied in conformance with AAMA 2603. Surface preparation shall consist of a multi-stage cleaning process and chromate conversion process per ASTM B 449. Finish coating shall be minimum dry film thickness of 1.8 mil.
 - 1. Coated surface shall be smooth, with no evidence of bubbles, dust, flux or orange peel.
 - 2. Color: CUSTOM COLOR selected by Architect.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install ornamental metal work in conformance with manufacturer's recommendations.
 - 1. Provide anchorage devices and fasteners where necessary for securing ornamental metal to in-place construction.
 - 2. Perform cutting, drilling, and fitting required to install ornamental metal. Set products accurately in location, alignment, and elevation; measured from established lines and levels.
- B. Fit exposed connections accurately together to form tight, hairline joints or, where indicated, with uniform reveals and spaces for sealants and joint fillers. Where cutting, welding, and grinding are required for proper shop fitting and jointing of ornamental metal, restore finishes to eliminate any evidence of such corrective work.
- C. Do not cut or abrade finishes that cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing, or provide new units as required.
- D. Install concealed gaskets, joint fillers, and flashings as work progresses.
- E. Restore protective coverings damaged during shipment or installation. Remove protective coverings only when there is no possibility of damage from other work yet to be performed at same location.
 - 1. Retain protective coverings intact; remove coverings simultaneously from similarly finished items to preclude nonuniform oxidation and discoloration.
- F. Field Welding: Comply with applicable AWS specification for procedures of manual shielded metal arc welding, for appearance and quality of welds, and for methods used in correcting welding work. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
- G. Corrosion Protection: Coat concealed surfaces of aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

3.02 CLEANING AND PROTECTION

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material.
- B. Clean aluminum by washing thoroughly with clean water and soap and rinsing with clean water.
- C. Protect finishes of ornamental metal from damage during construction period with temporary protective coverings approved by ornamental metal fabricator. Remove protective covering at time of Substantial Completion.
- D. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION

SECTION 06 1000 - ROUGH CARPENTRY

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Wood nailers and blocking.
- B. Plywood backer panels.

1.03 REFERENCE STANDARDS

- A. AFPA (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; American Forest and Paper Association; 2012.
- B. AWP A M4 - Standard for the Care of Preservative-Treated Wood Products; American Wood Protection Association.
- C. AWP A P17 - Fire Retardant Formulations; American Wood Protection Association; 2007.
- D. AWP A T1 - Use Category System: Processing and Treatment Standard; American Wood; American Wood protection; American Wood
- E. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.
- F. SPIB (GR) - Grading Rules; Southern Pine Inspection Bureau, Inc.; 2002.
- G. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17; West Coast Lumber Inspection Bureau; 2004, and supplements.
- H. WWPA G-5 - Western Lumber Grading Rules; Western Wood Products Association; 2011.

1.04 SUBMITTALS

- A. See Section 01 33 23 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: Submit manufacturer's specifications and other data for each carpentry anchorage, fastening, and miscellaneous material. Provide material certificates for all lumber and plywood.
 - 1. Wood Treatment Data: Submit chemical treatment manufacturer's instructions for handling, storage, installation and finishing of treated material.
 - 2. Fire-Retardant Treatment: Include certification by treating plant that treatment material complies with specified standard and other requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar material.

1.06 PROJECT CONDITIONS

- A. Coordination: Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other work.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Lumber Standards: Comply with Voluntary Product Standard PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by the American Lumber Standards Committee (ALSC) Board of Review.

1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
 3. Grade Stamps: Factory-mark each piece of lumber with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, species, moisture content at time of surfacing and mill.
- B. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
1. Provide dressed lumber, S4S, unless otherwise indicated.
 2. Provide seasoned lumber with 19% maximum moisture content at time of dressing and shipment, for sizes 2" or less in thickness, unless otherwise indicated.

2.02 DIMENSION LUMBER

- A. General: Provide dimension lumber of grades indicated according to ALSC National Grading Rule (NGR) provisions of inspection agency listed.
- B. For light framing provide "Stud" grade lumber for stud framing (2" to 4" thick, 2" to 6" wide, 10" and shorter) and "Standard" grade for other light framing (2" to 4" thick, 2" to 4" wide), any species.
- C. Sizes: Nominal sizes as indicated on drawings, S4S.
- D. Moisture Content: S-dry or MC19.
- E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
1. Lumber: S4S, No. 2 or Standard Grade per WCLIB or WWPA rules..
 2. Boards: Southern Pine No.2 Boards per SPIB rules, or any other graded construction board per WCLIB or WWPA rules.
 3. Moisture Content: 19 percent maximum for lumber items not specified to receive preservative treatment.

2.03 CONSTRUCTION PANELS

- A. Structural-Use Panel Standards: Comply with PS 1 "Voluntary Product Standard for Structural Plywood" for plywood panels and for products not manufactured under PS 1 provisions with American Plywood Association (APA) "Quality Assurance Policies for Structural-Use Panels Qualified to PRP-108", Form No. E 445.
- B. Trademark: Factory-mark each construction panel with APA trademark evidencing compliance with grade requirement.
- C. Species: Use only Group 1 - Any Species.
- D. Provide APA Performance-Rated Panels where structural-use panels are indicated for controlled applications, complying with requirements indicated under each application for grade designation, span rating, exposure durability classification, edge detail (where applicable) and thickness.
1. Thickness: Provide panels meeting requirements specified but not less than the thickness indicated.
 2. Span ratings: Provide panels with span ratings requires to meet "Code Plus" provisions of APA Form No. E30, "Engineered Wood Construction Guide".
- E. Structural Use Panels for Backing: PS 1 C-D plugged, Exposure 1, fire retardant treated plywood.
1. Thickness: 1/2 inch unless indicated otherwise.

2.04 ACCESSORIES

- A. Fasteners and Anchors: Provide fasteners of size and type indicated to comply with requirements specified.
 - 1. Nails, Wire, Brads, and Staples: ASTM F 1667.
 - 2. Power-Driven Fasteners: CABO NER-272.
 - 3. Wood Screws: ASME B18.6.1.
 - 4. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M)
 - 5. Bolts: Steel bolts per ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
 - 6. Anchors: Toggle bolt type for anchorage to hollow masonry.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and supporting structure and conditions under which the rough carpentry work is to be installed.
 - 1. Notify Construction Manager in writing of conditions detrimental to the work.
 - 2. Do not proceed with installation until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.
- D. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.
- E. Discard units of material with defects that impair quality of rough carpentry and those too small to use with minimum number of joints or optimum joint arrangement.
- F. Apply field treatment per AWWA M4 to cut surfaces of preservative-treated lumber and plywood.
- G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. "Recommended Nailing Schedule" of referenced framing standard and with AFPA's "National Design Specifications for Wood Construction".
- H. Use common wire nails, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not fully penetrate members where opposite side is exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.
- I. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

3.03 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim. Form shapes shown and cut as required for true line and level of attached work.
- B. Attach to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.04 INSTALLATION OF CONSTRUCTION PANELS

- A. Comply with APA Form No. E30, "APA Design/Construction Guide: Residential and Commercial", for types of structural-use panels indicated.

- B. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.

3.05 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

END OF SECTION

SECTION 06 4023 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Architectural cabinets including:
 - 1. Laminate clad cabinets.
- B. Board Paneling
- C. Door frames and casings.
- D. Laminate-clad panels.
- E. Laminate-clad shelving.
- F. Shop finishing of architectural woodwork.
- G. Installation of architectural woodwork.

1.03 REFERENCES

- A. ANSI A208.1 - Particleboard, Mat-Formed Wood; 1999.
- B. ANSI A208.2 - Medium Density Fiberboard for Interior Use; 2002.
- C. AWS - Architectural Woodwork Standards; Adopted and published jointly by Architectural Woodwork Institute, Architectural Woodwork Manufacturers Association of Canada & Woodwork Institute; 2009, Edition 1
- D. AWI - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute; 2006, Eighth Edition, Version 2.0.
- E. BHMA A156.9 - American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association; 2003 (ANSI/BHMA A156.9).
- F. GSA CID A-A-1936 - Adhesive, Contact, Neoprene Rubber; Federal Specifications and Standards; 1996.
- G. NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.
- H. PS 1 - Construction and Industrial Plywood; National Institute of Standards and Technology (Department of Commerce); 2005.
- I. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

1.04 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction prior to woodwork installation.

1.05 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: Submit manufacturer's product data for each product and process specified as work of this Section and incorporated into items of architectural woodwork during fabrication, finishing and installation.
- C. Shop Drawings: Submit shop drawings showing location of each item, dimensioned plans and elevations, large scale details, attachment devices and other components.
 - 1. Prepare shop drawings at scale not less than 1/4 inch for composite plans, 3/4 inch for enlarged plans, 3/4 inch for elevations, 3/4 inch for sections and 3 inch for details.

2. Identify core material wherever used.
3. For Flush Wood Paneling: Show location of panel work, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - a. Show details full size.
 - b. Show locations and sizes of furring and blocking, including concealed blocking specified in other Sections.
 - c. Show veneer leaves with dimensions, grain direction, exposed face, and an identification number indicated for each leaf. Identification number shall indicate the flitch and the sequence within the flitch for each leaf.
- D. Quality Certification: Submit woodwork manufacturer's (Fabricator's) certification, stating that fabricated woodwork complies with quality grades and other requirements indicated.
- E. Qualification Data: Submit written information to establish installer qualifications, demonstrating capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information as required.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm experienced in successfully producing architectural woodwork similar to this Project, with sufficient production capacity to produce required units without causing delay in the Work.
- B. Quality Standard: Unless otherwise indicated, comply with Architectural Woodwork Standards for grades of interior architectural woodwork, construction, finishes and other requirements.
- C. Assume undivided responsibility for architectural woodwork including fabrication, finishing and installation.

1.07 MOCK-UP

- A. Prior to fabrication and delivery of architectural woodwork, construct a mock-up to verify selections made under Sample submittals and to demonstrate quality of workmanship, quality of materials, aesthetic effects, and execution.
- B. Mock-ups shall be complete with all components, hardware, and accessories required for final installation.
- C. Mock-ups shall comply with the following requirements, using materials indicated for completed work.
 1. Locate mockups in the locations indicated or, if not indicated, as directed by Architect.
 2. Build mockups for wood paneling in sizes approximately 48 inches long by 48 inches high by full thickness, including face and back-up.
 3. Notify Architect 7 days in advance of the dates and times when mockup will be constructed and installed.
 4. Maintain mockups during construction in an undisturbed condition as the standard of quality for judging the completed Work.

1.08 PRE-INSTALLATION MEETING

- A. Schedule a pre-installation conference minimum one week prior to delivery, and installation, of architectural woodwork and associated work.
 1. Meet at the Project Site with the following parties in attendance.
 - a. Architect.
 - b. Owner's Representative.
 - c. Construction Manager.
 - d. Installers of architectural woodwork, wet work, plaster, finish painting, and other finishes.
 - e. Installers of associated work, including architectural, mechanical, electrical, and communications trades work.

- f. Firms or person responsible for continued operation (whether temporary or permanent) of HVAC system as required to maintain temperature and humidity conditions.
 - g. Other parties concerned with performance of architectural woodwork.
 - 2. Review coordination and environmental controls required for proper installation and ambient conditioning in areas to receive work.
 - 3. Tour representative areas where architectural woodwork is to be installed.
 - a. Inspect and discuss conditions to be encountered.
 - b. Discuss preparation work required to be performed by other trades.
 - 4. Proceed with woodwork installation only where everyone concerned agrees that required ambient conditions can be maintained.
- B. Construction Manager shall record discussion, including agreement or disagreement on significant matters. Furnish copies of report to all parties present within 5 days after meeting date.
 - 1. If substantial disagreements exist at conclusion of meeting, determine how disagreements will be resolved, and set date and time to reconvene meeting.

1.09 DELIVERY, STORAGE, AND PROTECTION

- A. Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.
- B. Do not deliver woodwork until painting, wet work, grinding and similar operations that could damage, soil or deteriorate woodwork have been completed in installation areas.
 - 1. If woodwork must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Environmental Requirements".

1.10 PROJECT CONDITIONS

- A. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before manufacturing woodwork; show recorded measurements on final shop drawings. Coordinate manufacturer's schedule with construction progress to avoid delay of Work.
 - 1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with manufacturer of woodwork without field measurements. Coordinate other construction to ensure actual dimensions correspond to guaranteed dimensions.

1.11 ENVIRONMENTAL REQUIREMENTS

- A. Environmental Conditions: Obtain and comply with Woodwork Manufacturer's and Installer's coordinated advice for optimum temperature and humidity conditions for woodwork during its storage and installation.
 - 1. Do not install woodwork until these conditions have been attained and stabilized so that woodwork is within plus or minus 1.0 percent of optimum moisture content from date of installation through remainder of construction period.

1.12 COORDINATION

- A. Coordinate selection, application, and factory finishing of architectural wood-veneer woodwork with wood flush doors and other related work specified in other Sections.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. High-Pressure Decorative Laminate:
 - 1. Manufacturer: Subject to compliance with requirements, provide high pressure decorative laminates by one of the following:
 - a. Formica Corp.
 - b. Laminart.
 - c. Nevamar Corp.

- d. Wilsonart International
- B. Reclaimed Wood:
 - 1. Creation Woodworks
 - 2. Americana Resource Recovery & Reuse, Inc.
- C. Fabric wrapped Panels:
 - 1. Manufacturer: Subject to compliance with requirements, provide panel material by one of the following:
 - a. Homasote Company; N.C.F.R. Homasote
 - b. USG; Micore 300 Mineral Fiber Board
- D. Substitutions: See Section 01 2500 - Substitution Procedures.

2.02 MATERIALS

- A. Provide materials that comply with requirements of the AWS Woodwork Standards for each type of lumber, panel product, woodwork and quality grade indicated, and where the following products are part of woodwork with requirements of the referenced product standards, that apply to product characteristics indicated.
 - 1. Hardboard: ANSI/AHA A135.4.
 - 2. High Pressure Laminate: NEMA LD 3.
 - 3. Wood Particleboard: ANSI A208.1.
 - 4. Medium-Density Fiberboard: ANSI A208.2.
 - 5. Softwood Plywood: PS 1.
- B. High Pressure Decorative Laminates: Comply with referenced standard and provide colors matching selections on Room Finish Schedule. Acceptability of any manufacturer is contingent upon availability of patterns, colors, sheens and textures matching selections as acceptable to Architect.
- C. Thermoset Decorative Overlay (Melamine): Thermofused impregnated decorative overlay consisting of polyester or melamine resin impregnated web bonded to a core material using minimum average high pressure of 360 psi and minimum 300 DegF.
 - 1. Comply with ALA 1992 "Performance Standard for Thermoset Decorative Panels".
 - 2. Provide plastic laminate for exposed edges.
- D. Moisture Resistant Particleboard: ANSI A208.1 Moisture resistant grade (MR10), industrial M3 or M2 grade.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. SierraPine Composite Solutions; Encore MR
 - b. Boise Cascade; Evergreen
- E. Moisture Resistant Medium Density Fiberboard: ANSI A208.2 Moisture resistant industrial grade medium density fiberboard, Grade 150.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. SierraPine Composite Solutions; Medex
 - b. Temple-Inland; UltraStock-MR
- F. Fabric wrapped panels: Fiberboard or mineral fiber board composed of recycled newsprint, free from formaldehyde based resins, or slag wool fiber and having Class 'A' flamespread.
 - 1. Fabric: Refer to Room Finish Schedule.

2.03 MILLWORK HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Section 08 7100 - Door Hardware.
- B. Cabinet Hardware Schedule: Refer to schedule at end of this Section for cabinet hardware required for architectural cabinets.
- C. Hardware Standard: Comply with BHMA A156.9 for items indicated by reference to BHMA numbers or referenced to this standard.

- D. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA code number indicated.
 - 1. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.
 - 2. Satin Stainless Steel, Stainless-Steel Base: BHMA 630.
- E. For concealed hardware provide manufacturer's standard finish that complies with product class requirements of BHMA A156.9.
- F. Bumpers (silencers) for cabinet doors and drawers: Provide non-staining, non-marring pressure sensitive adhesive backed polyurethane bumpers. 3M; Bumpon protective products SJ Series
 - 1. Thickness: 0.110 inch.
 - 2. Color: Clear
 - 3. Style: Cylindrical, Tapered Square or Other provided the impact surface is flat.
- G. Grommets:
 - 1. Type 2: Rectangular aluminum with cover for 4 inch slot; Doug Mockett & Co. "The Max - Max 1/A". Finish: Clear natural anodize.
- H. Door Lock Assembly:
 - 1. Door Lock: Offset Cam Vertical Mount; Timberline "TLCB 245".
 - 2. Lock Plug: Key all lock plugs alike; Timberline "TLLP 100 100TA", nickel finish.
 - 3. Strike Plate: Timberline "TLSP 100", Black finish.
- I. Pulls: Wire type, 4 inches center to center; Stanley 4484, satin finish aluminum.
- J. Drawer Slides: Full extension type, zinc finish.
 - 1. Pencil Drawer: 45 pound rating; Accuride 2006.
 - 2. Box Drawer: 100 pound rating; Accuride 3832.
 - 3. File Drawer: 150 pound rating; Accuride 4032.
- K. Hinges: Concealed type, 170 degree opening; Blum Clip 170 Series.
- L. Heavy Duty Shelf Standards: Knappe and Vogt, No. 87 standards with No. 186/187 shelf support brackets.
 - 1. Thickness: 14 gage
 - 2. Material/finish: Galvanized steel.
- M. Shelf Support Pins: Spoon shaped, 1/4 inch diameter; Hafele 282.04.739.

2.04 FABRICATION

- A. Wood Moisture Content: Comply with requirements of Architectural Woodwork Standards for moisture content of lumber in relation to relative humidity conditions existing during time of fabrication and in installation areas.
- B. Fabricate woodwork to dimensions, profiles and details indicated.
- C. Complete fabrication including assembly, finishing and hardware application before shipment to project site to maximum extent possible.
 - 1. Disassemble components only as necessary for shipment and installation.
 - 2. Where necessary for fitting at site, provide ample allowance for scribing, trimming and fitting.
- D. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work and similar items.
 - 1. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings.
 - 2. Smooth edges of cut-outs and, where located in countertops and similar exposures, seal edges of cut-outs with a water-resistant coating.
- E. Provide only medium density fiberboard or particleboard substrates for plastic laminates and melamines. Plaster, gypsum board or concrete are NOT considered appropriate substrates.

2.05 LAMINATE-CLAD STANDING AND RUNNING TRIM

- A. Quality Standard: Comply with AWS Section 6 - Interior & Exterior Millwork, unless more stringent requirements are indicated.
 - 1. Grade: Custom.
- B. Standing and running trim includes, but is not limited to, the following.
 - 1. Window sills.
- C. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Horizontal Surfaces Other than Tops: Grade HGS, 0.048-inch nominal thickness.
 - 2. Edges: Grade HGS, 0.048-inch nominal thickness.
- D. Laminate Cladding for Non-Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Balancing Sheet: Grade BKL, 0.020 inch nominal thickness.
- E. Colors, Patterns, and Finishes: Provide materials and products complying with the following:
 - 1. Match selections on Room Finish Schedule as acceptable to Architect.

2.06 DOOR FRAMES AND CASINGS FOR TRANSPARENT FINISH

- A. Quality Standard: Comply with AWS Section 6 - Interior & Exterior Millwork, unless more stringent requirements are indicated.
 - 1. Grade: Premium (Solid Stock Only).
- B. Door frames and casings include, but is not limited to, the following.
 - 1. Door frames and casings.
 - 2. Sidelight frames.
 - 3. Transom panel frames.
 - 4. Borrowed light frames.
 - 5. Framed window openings.
 - 6. Casings.
- C. Frame Type: Solid stock lumber.
- D. Wood Species: Match Existing.

2.07 LAMINATE-CLAD ARCHITECTURAL CABINETS (CASEWORK) AND PANELS FOR APPLIANCES

- A. Quality Standard: Comply with AWS Section 10 - Casework, unless more stringent requirements are indicated.
 - 1. Grade: Custom.
- B. AWI Type of Cabinet Construction: Flush overlay.
- C. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Horizontal Surfaces Other than Tops: Grade HGS, 0.048-inch nominal thickness.
 - 2. Vertical Surfaces: Grade HGS, 0.048-inch nominal thickness.
 - 3. Edges: Grade HGS, 0.048-inch nominal thickness.
- D. Laminate Cladding for Semi-Exposed Surfaces: As follows:
 - 1. Surfaces Other than Drawer Bodies: High pressure decorative laminate, Grade VGS, 0.028-inch nominal thickness.
 - 2. Drawer Sides and Backs: Hardwood plywood, shop finish.
 - 3. Drawer Bottoms: Hardwood plywood, shop finish.
- E. Subtops: Softwood Plywood. Provide with Exposure 1 plywood at sink areas and as indicated.
- F. Colors, Patterns, and Finishes: Provide materials and products complying with the following requirements.
 - 1. Match selections on Room Finish Schedule as acceptable to Architect.

2.08 BOARD PANELING FOR TRANSPARENT FINISH

- A. Quality Standard: Comply with AWS Section 6 - Interior and Exterior Millwork, unless more stringent requirements are indicated.
 - 1. Grade: Custom
 - 2. Veneer Species: Mixed Species Reclaimed Barn Siding - Prefinished
 - 3. Basis of Design Source: Creation Woodworks
 - a. Contact: Ruth Gee 517-930-4018

2.09 MARKER BOARD PANELS

- A. Quality Standard: Comply with AWS Section 8 - Wall Surfacing, unless more stringent requirements are indicated.
 - 1. Grade: Custom.
- B. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Face Sheet: Grade HGS, 0.048-inch nominal thickness.
 - 2. Edges: Grade HGS, 0.048-inch nominal thickness.
- C. Laminate Cladding for Non-Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Balancing Sheet: Grade BKL, 0.020 inch nominal thickness.
- D. Substrate: Masonite Flush Door Series Hollow Core Door; Raw Hardboard Flush Smooth Door
 - 1. Thickness: 1-3/8 inches
 - 2. Size: 32 inches by 80 inches
- E. Colors, Patterns, and Finishes: Provide materials and products complying with the following requirements.
 - 1. Match selections on Room Finish Schedule as acceptable to Architect.

2.10 LAMINATE-CLAD CLOSET AND UTILITY SHELVING

- A. Quality Standard: Comply with AWS Section 6 - Interior & Exterior Millwork, unless more stringent requirements are indicated.
 - 1. Grade: Custom.
- B. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Horizontal Surfaces: Grade HGS, 0.048-inch nominal thickness.
 - 2. Vertical Surfaces: Grade HGS, 0.048-inch nominal thickness.
 - 3. Edges: Grade HGS, 0.048-inch nominal thickness.
- C. Colors, Patterns, and Finishes: Provide materials and products complying with the following requirements.
 - 1. Match selections on Room Finish Schedule as acceptable to Architect.
- D. Closet Coat Rod: 1-1/16 inch heavy duty tubing, 0.109 inch wall thickness; Knape and Vogt 770-1 with chrome-look finish.
 - 1. End Bracket: Knape and Vogt 735 CHR with chrome-look finish.

2.11 FASTENERS AND ANCHORS

- A. Screws: Select material, type, size and finish required for each use. Comply with FS-S-111 for applicable requirements.
 - 1. For metal framing supports, provide screws as recommended by metal framing manufacturer.
- B. Nails: Select material, type, size and finish required for each use. Comply with FS FF-N-105 for applicable requirements.
- C. Anchors: Select material, type, size and finish required by each substrate for secure anchorage.

1. Provide non-ferrous metal or hot-dip galvanized anchors and inserts where required for corrosion-resistance.
 2. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts and anchors, as required to be set into masonry work for subsequent woodwork anchorage.
- D. Adhesives: Construction type, suitable for substrates and loads.

2.12 SHOP FINISHING OF WOOD-VENEER ARCHITECTURAL WOODWORK

- A. Quality Standard: Comply with AWS Section 5 - Finishing, unless more stringent requirements are indicated.
- B. Entire finishing of architectural woodwork, is specified in this Section, regardless of whether shop applied or applied after installation.
1. Shop Finishing: To greatest extent possible, finish architectural woodwork at the shop. Defer only final touchup, cleaning, and polishing until after installation.
 - a. Shop finishing includes flush wood-veneer doors specified in Section 08 14 16 - Flush Wood Doors.
- C. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork as applicable to each unit of work.
1. Backpriming: Apply 2 coats of sealer or primer compatible with finish coats to concealed surfaces of panelwork.
 - a. Apply 2 coats of sealer or primer compatible with finish coats to concealed surfaces of panelwork.
 - b. Apply 1 coat of sealer or primer compatible with finish coats to concealed surfaces of standing and running trim.
- D. Transparent Finish: Comply with requirements indicated below for grade, finish system, staining, and sheen, with sheen measured on 60-degree gloss meter per ASTM D 523.
1. Grade: Custom.
 2. AWI Finish System: Catalyzed Polyurethane.
 3. Filler Coat: None required.
 4. Staining: None required.
 5. Sheen: Satin, 30 gloss units.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrate and conditions under which architectural woodwork is to be installed.
1. Notify Construction Manager in writing of conditions detrimental to proper and timely completion of work.
 2. Do not proceed with work until unsatisfactory conditions have been corrected in an acceptable manner.

3.02 PREPARATION

- A. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.
- B. Prior to installation of architectural woodwork, examine shop fabricated work for completion, and complete work as required, including removal of packing.

3.03 INSTALLATION

- A. Quality Standard: Install woodwork to comply with Architectural Woodwork Standards for the grade specified in Part 2 of this Section for type of woodwork involved.
- B. Install woodwork plumb, level, true and straight with no distortion. Shim as required using concealed shims. Install to a tolerance of 1/8 inch in 8'-0" for plumb and level (including tops); and with no variation in flushness of adjoining surfaces.

- C. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.
- D. Anchor woodwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation.
- E. Door Frames and Casings: Install using full length pieces.
 - 1. Install plumb, level, and true.
 - 2. Fill gaps, if any, between pieces with plastic wood filler, sand smooth, and finish same as base.
 - 3. Secure in-place with concealed fasteners.
- F. Casework: Install casework plumb, level, and without distortion so doors and drawers fit properly.
 - 1. Install with no more than 1/8 inch sag, bow, or other variation in 96 inches from straight line.
 - 2. Adjust hardware to center doors and drawers in openings.
 - 3. Complete installation of hardware and accessory items as required.
- G. Board Paneling: Anchor paneling to substrate with exposed fasteners on face of boards.

3.04 ADJUSTMENT AND CLEANING

- A. Repair damaged and defective woodwork where possible to eliminate defects functionally and visually; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean woodwork on exposed and semi-exposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

3.05 PROTECTION

- A. Provide protection for architectural woodwork wherever damage may occur as consequence of other installation work including mechanical, electrical.
 - 1. Maintain protection as required to prevent nicks, scratches, dents, abrasion or other damage.
 - 2. Maintain conditions in manner acceptable to manufacturer/installer, to ensure architectural woodwork is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 07 2129 - SPRAYED INSULATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Cellulose insulation applied to underside of structure.

1.03 REFERENCE STANDARDS

- A. ASTM C 1149 - Standard Specification for Self-Supported Spray Applied Cellulosic Thermal Insulation; 1997.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.

1.04 SUBMITTALS

- A. See Section 01 33 23 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: Provide data on materials, describing acoustical properties.
- C. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.
- D. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years of experience.
- C. Products Specified by Flammability or Combustibility Criteria: Listed and classified by testing agency acceptable to the authority having jurisdiction.
 - 1. Identify products with appropriate markings of applicable testing and inspecting organization.
 - a. Surface Burning Characteristics: ASTM E 84.
- D. Manufacturer's written certification that product contains no asbestos, fiberglass or other manmade mineral fibers
- E. Material to have been tested in accordance with ASTM E 1042. Testing laboratory must be NVLAP accredited.

1.06 MOCK-UP

- A. Provide a mock-up, 10 feet long by 10 feet wide, illustrating ceiling treatment.
- B. Locate where directed.
- C. Mock-up may remain as part of the Work.

1.07 FIELD CONDITIONS

- A. Maintain acceptable ambient and substrate surface temperatures prior to, during, and after installation of insulation materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Cellulose Fiber:
 - 1. International Cellulose Corp; Product k-13: www.spray-on.com.
 - 2. ThermoCon, Inc: www.thermocon.com.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

- A. Cellulose Fiber Insulation: ASTM C739; treated cellulose fiber, color to match existing conforming to the following test requirements:
 - 1. NRC: 0.75 for 1 inch thickness.
 - 2. Moisture Absorption: Maximum 15 percent by weight.
 - 3. Flame Spread and Smoke Developed Index: 10/0, when tested per ASTM E 84.

2.03 ACCESSORIES

- A. Primer: As required by insulation manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are clean, dry, and free of matter that may inhibit adhesion.
- B. Verify other work on and within spaces to be insulated is complete prior to application.

3.02 PREPARATION

- A. Mask and protect adjacent surfaces from overspray or damage.
- B. Apply primer in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Install insulation per manufacturer's instructions.
- B. Install insulation to a uniform monolithic density without voids.
- C. Install in thickness to match existing adjacent spray acoustical insulation.
- D. Tamp wet insulation surface to improve adhesion and to achieve a smooth surface.

3.04 CLEANING AND PATCHING

- A. Remove overspray and fallout of sprayed-on insulation materials immediately upon completion of insulation work in each area or space.
 - 1. Clean surfaces to remove evidence of soiling.
 - 2. Repair or replace damaged work to restore surfaces to an acceptable condition.
- B. Coordinate sprayed-on insulation work with other trades to minimize the possibility of damage to sprayed-on insulation resulting from subsequent work.
 - 1. Patch damaged areas as work of other trades is completed.
- C. Do not allow damaged insulation to be covered over or otherwise concealed before patching is complete.

3.05 PROTECTION

- A. Do not permit subsequent construction work to disturb applied insulation.
 - 1. Provide temporary coverings or enclosures where insulation will be subjected to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION

SECTION 07 8400 - FIRESTOPPING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Firestop voids and openings in fire and smoke assemblies, walls, floors, perimeters; unless firestopping is specifically required under other sections.
 - 1. Penetrations through fire-resistance-rated floor and roof construction including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.
 - 2. Penetrations through fire-resistance-rated walls and partitions including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.
 - 3. Penetrations through smoke barriers and construction enclosing compartmentalized areas involving both empty openings and openings containing penetrating items.
 - 4. Sealant joints in fire-resistance-rated construction.

1.03 REFERENCES

- A. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2008.
- B. ASTM E 814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops; 2006.
- C. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- D. FM P7825 - Approval Guide; Factory Mutual Research Corporation; current edition.
- E. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.
- F. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 DEFINITIONS

- A. Firestopping: Use of a material or combination of materials in a fire-rated structure (wall or floor) where it has been breached, so as to restore the integrity of the fire rating for that floor or wall assembly.
- B. Firestop System: Use of a specific firestop material or combination of materials in conjunction with a specific wall or floor construction type and a specific penetrant(s), and/or a specific construction gap, to achieve a fire rated barrier.
- C. Barrier: Any bearing or non-bearing wall or floor that has an hourly fire and/or smoke rating.
- D. Through-Penetration: Any penetration of a fire-rated wall or floor assembly that completely breaches the barrier.
- E. Membrane-Penetration: Any penetration of a fire-rated wall or floor assembly that breaches only one side of the barrier.
- F. Construction Gaps: Any gap, joint, or opening, whether static or dynamic, where the top of a wall may meet a floor; wall to wall applications; edge to edge floor configurations; floor to exterior wall; or any linear breach in a rated barrier. Where movement is required, firestopping system must comply with UL 2079 for dynamic joints.
- G. Perimeter Firebarrier System: Fire-rated floor assembly, non-rated curtain wall assembly, and linear void between adjacent curtain wall and floor assembly, and materials used to prevent passage of flames and hot gasses through it or the occurrence of flames on its unexposed side.
- H. F-Rating: The amount of time a firestop can withstand direct flame without burning through barrier per ASTM E 814/UL 1479.

- I. T-Rating: The amount of time a through-penetration firestop limits the temperature rise on the cold side (outside test furnace) per ASTM E 814/UL 1479.

1.05 PERFORMANCE REQUIREMENTS

- A. General: Provide firestopping systems that are produced and installed to resist the spread of fire, according to requirements indicated, and resist passage of smoke and other gases. Firestop systems shall maintain the original fire resistance rating of floor, wall, or partition assembly in which firestop system is being installed.
- B. F-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with F ratings indicated, as determined per ASTM E 814, but not less than that equaling or exceeding the fire-resistance rating of the constructions penetrated.
- C. T-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with T ratings, in addition to F ratings, as determined per ASTM E 814, where indicated and where systems protect penetrating items exposed to contact with adjacent materials in occupiable floor areas.
 1. Where firestop systems protect penetrations located outside fire-resistive shaft enclosures.
 2. Where firestop systems protect penetrating items larger than a 4 inch diameter nominal pipe or 16 sq. in. in overall cross sectional area.
- D. Fire-Resistive Joint Sealants: Provide joint sealants with fire-resistance ratings indicated, as determined per ASTM E 119, but not less than that equaling or exceeding the fire-resistance rating of the construction in which the joint occurs.

1.06 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: Manufacturer's product literature for each type of firestop product to be installed on Project. Indicate uses, performance and limitation criteria, and test data.
 1. SUBMIT DATA FOR EACH TYPE OF FIRESTOPPING FOR EACH SPECIFIC CONDITION AND EACH SPECIFIC APPLICATION.
 - a. UL report with illustration of system and system number.
 - 1) Where a particular condition does not conform to a tested firestopping system design, SUBMIT an "Engineering Judgement Report" with illustrations signed by Firestopping Manufacturer's chief fire protection engineer for review and acceptance by authorities having jurisdiction.
 - b. Fire and temperature rating data.
 - c. Certification that components are asbestos free.
- C. Shop Drawings: Show materials, installation methods, and relationships to adjacent construction for each through fire-penetration fire stop system, each type of construction condition penetrated, each type of penetrating item; and each fire resistive joint system.
 1. SUBMIT SHOP DRAWINGS FOR EACH SPECIFIC INSTALLATION CONDITION. Identify intended products and applicable UL Design No.
 2. Where Project conditions require modification of a qualified testing and inspection agency's system to suit a particular firestop condition, submit illustration, with modifications marked, approved by firestop system manufacturer's fire-protection engineer.
- D. Product certificate signed by manufacturer of firestopping products certifying their products comply with specified products.

1.07 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section, capable of providing technical/consulting services during construction.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years experience.

- C. Fire-Test-Response Characteristics: Provide firestopping that complies with the following requirements and those specified under the "System Performance Requirements" article:
 - 1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, ITS (Warnock Hersey), Omega Point, or other agency performing testing and follow-up inspection services for firestop systems that is acceptable to authorities having jurisdiction.
 - 2. Through-penetration firestop systems are identical to those tested per ASTM E 814 under conditions where positive furnace pressure differential of at least 0.01 inch of water is maintained at a distance of 0.78 inch below the fill materials surrounding the penetrating items in the test assembly. Provide rated systems complying with the following requirements:
 - a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
 - b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by UL "Fire Resistance Directory", ITS (Warnock Hersey), Omega Point, or other qualified testing and inspecting agency.
 - 3. Fire-resistive joint systems are identical to those tested for fire-response characteristics per UL 2079. Provide rated systems complying with the following requirements:
 - a. Fire-Resistance Rating of Joint Systems: As indicated by reference to design designations listed by UL "Fire Resistance Directory", ITS (Warnock Hersey), Omega Point, or other qualified testing and inspecting agency.
 - 1) Fire-Resistance Rating of Joint Systems NOT Conforming to a Tested Design (perimeter slab edge conditions): Per "Engineering Judgement Report" accepted and approved by Authorities having jurisdiction.
 - b. Fire-resistive Joint System products shall bear classification marking of qualified testing and inspection agency.
- D. Single-Source Responsibility: Obtain through-penetration firestop systems for each kind of penetration and construction condition indicated from a single manufacturer.
- E. Provide firestopping products containing no detectable asbestos as determined by the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, "Polarized Light Microscopy".
- F. Firestopping work shall be performed by a Contractor trained and approved by firestopping manufacturer.

1.08 MOCK-UP

- A. Install one firestopping assembly representative of each fire rated design required on Project.
 - 1. Where one design may be used for different penetrating items or in different wall or floor constructions, install one assembly for each combination.
 - 2. Where firestopping is intended to fill a linear opening, install minimum 4 lineal feet.
- B. Obtain approval from authorities having jurisdiction before proceeding.
- C. If accepted, mock-ups will represent the minimum standard for the Project, and may remain as part of the Work.

1.09 PRE-INSTALLATION MEETING

- A. Schedule a pre-installation conference minimum two weeks prior to start of firestopping installation and associated work.
 - 1. Meet at the Project Site with the following parties in attendance.
 - a. Owner's Representative.
 - b. Architect.
 - c. Construction Manager.
 - d. Firestopping Contractor.
 - e. Firestopping Manufacturer's Representative.

- f. Installers of associated work, including architectural, mechanical, electrical, and communications trades work.
 - g. Other parties concerned with performance of firestopping, including authorities having jurisdiction.
 - 2. Review submittals for each specific condition.
 - 3. Review each condition specific firestopping material and installation method.
 - 4. Tour representative areas where firestopping is to be installed.
 - a. Inspect and discuss each type of condition and each type of substrate to be encountered.
 - b. Discuss preparation work required to be performed by other trades.
- B. Construction Manager shall record discussion, including agreement or disagreement on significant matters. Furnish copies of report to all parties present within 5 days after meeting date.
 - 1. If substantial disagreements exist at conclusion of meeting, determine how disagreements will be resolved, and set date and time to reconvene meeting.

1.10 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure designated through-penetration firestop systems are installed per specified requirements.
- B. Coordinate construction of fire-resistive joint system installations to ensure that designated joint firestop systems are installed per specified requirements.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Firestop products and systems shall be designed and installed so the basic sealing system will allow full restoration of the thermal and fire resistance properties of the barrier being penetrated with minimal repair if penetrants are subsequently removed.
- 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. Color: All exposed firestopping shall have a readily identifiable color (not white) to allow for visual inspection during construction.
 - 1. Where firestopping is to be exposed to view after completion of construction use grey color to maintain aesthetics.

2.02 THROUGH-PENETRATION FIRESTOP SYSTEMS

- A. Materials listed in UL "Fire Resistance Directory" under product Category XHEZ for the following systems:
 - 1. Floor Penetration Systems
 - a. Concrete floors with a minimum thickness less than or equal to 5 inches.
 - 1) UL-Classified Products FA Series or CA Series.
 - b. Concrete floors with a minimum thickness greater than 5 inches.
 - 1) UL-Classified Products FB Series or CB Series.
 - c. Framed floors.
 - 1) UL-Classified Products FC Series or CC Series.
 - 2. Wall Penetration Systems
 - a. Concrete or masonry walls with a minimum thickness less than or equal to 8 inches.
 - 1) UL-Classified Products WJ Series or CJ Series.
 - b. Concrete or masonry walls with a minimum thickness greater than 8 inches.
 - 1) UL-Classified Products WK Series or CK Series.
 - c. Framed walls.
 - 1) UL-Classified Products WL Series or CL Series.

2.03 ACCESSORIES

- A. Fill, Void, or Cavity Materials: Materials listed in UL "Fire Resistance Directory" under Category XHHW.
- B. Forming Materials: Materials listed in UL "Fire Resistance Directory" under Category XHKU.
- C. Safing Insulation: Mineral fibers formed into blankets, complying with ASTM C 665, rated non-combustible by NFPA in accordance with ASTM E 84, density not less than 4.0 lbs. per. cu. ft., fire resistant in accordance with ASTM E 119, formulated for fire containment at floor perimeters.
 - 1. Safing Clips: Galvanized steel safing clips approved by safing insulation manufacturer for holding insulation in place.
 - 2. Caulking Compound: Material approved by safing insulation manufacturer for sealing joint between foil backing of safing insulation and edge of adjacent construction against penetration of smoke.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 CONDITIONS REQUIRING FIRESTOPPING

- A. Provide firestopping for conditions specified whether or not firestopping is indicated, and if indicated, whether such material is designated as insulation, safing, or otherwise.
 - 1. Insulation types specified in other Sections shall not be installed in lieu of firestopping material specified herein.
- B. Penetrations: Included are conduit, cable, wire, pipe, duct, or other elements which pass through one or both outer surfaces of a fire rated floor, wall, or partition.
 - 1. Where a penetration occurs through a structural floor or roof, except slab on grade, and a space would otherwise remain open between the surfaces of the penetration and the edge of the adjoining structural floor or roof, provide firestopping to fill such spaces per ASTM E 814 and UL 2079 for dynamic movement.
 - 2. Where penetrations occur at fire-rated walls or partitions of solid type construction, provide firestopping to completely fill spaces around the penetration, per ASTM E 814.
 - 3. Where penetrations occur at fire-rated walls or partitions of hollow type construction, provide firestopping to completely fill spaces around the penetration, on each side of the wall or partition, per ASTM E 814.
 - 4. Requirements for penetrations shall apply whether or not sleeves have been provided, and whether or not penetrations are to be equipped with escutcheons, or other trim. If penetrations are sleeved, firestop annular space, if any, between sleeve and wall opening.
- C. Provide firestopping to fill miscellaneous voids and openings in fire-rated construction in manner essentially the same as specified herein before.

3.03 PREPARATION

- A. Surface Cleaning: Clean out openings and joints immediately prior to installing firestopping to comply with recommendations of firestopping manufacturer and the following requirements:
 - 1. Remove all foreign materials from surfaces of opening and joint substrates and from penetrating items that could interfere with adhesion of firestopping.
 - 2. Clean opening and joint substrates and penetrating items to produce clean, sound, and dry surfaces capable of developing optimum bond with firestopping. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form release agents from concrete.

- B. Priming: Prime substrates where recommended by firestopping manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of Work and would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestopping materials. Remove tape as soon as it is possible to do so without disturbing the firestoppings seal with substrates.

3.04 INSTALLATION OF SAFING INSULATION

- A. Install safing as recommended by manufacturer and as acceptable to Fire Marshal.
- B. Install safing insulation to fill gap between edges of walls or floors and back of other construction on safing clips spaced as needed to support insulation but not further apart than 24 inches o.c. Cut safing insulation wider than gap to be filled to ensure compression fit and seal joint between insulation and edge of construction. Leave no voids in completed installation.

3.05 INSTALLATION - FORMING, PACKING, OR BACKING MATERIALS

- A. Install forming, packing, or backing materials in accordance with manufacturer's instructions, to support fill materials during their application and in position required to produce cross-sectional shapes and depths required to maintain fire separations per UL listing.
- B. Remove or leave in place in accordance with UL system.

3.06 INSTALLATION - FILL, VOID OR CAVITY MATERIALS

- A. Install fill, void, or cavity materials in accordance with manufacturer's instructions, to come in contact with, and adhere to substrates to maintain fire separations per UL listing.
- B. For fill materials exposed to view, finish to a smooth, uniform surface flush with adjacent construction.

3.07 INSTALLATION - FIRESTOP SEALANT OR SEALER

- A. Install in accordance with manufacturer's instructions, to maintain fire separations per UL listing.

3.08 INSTALLATION - OTHER COMPONENTS

- A. Install other components, like cover plates, retainers, fitting, etc., in accordance with manufacturer's instructions, to maintain fire separations, per UL listing.

3.09 RESPONSIBILITY

- A. Contractor is responsible to select a system, or combination of systems which, when installed, will maintain required fire separation between building elements.
- B. System must provide the fire (F) rating and/or temperature (T) rating as required by applicable codes.
- C. Perform patching and repair of firestopping systems damaged by other trades.

3.10 FIELD QUALITY CONTROL

- A. Keep areas of firestopping work accessible and notify authorities having jurisdiction, or other designated inspectors, of work completion and ready for final inspection.
 - 1. Do not conceal firestopping installations behind other construction until authorities having jurisdiction have examined each installation.
 - 2. If deficiencies are found, repair, or replace fire resistive joint to comply with system requirements and authorities having jurisdiction.
- B. At completion of firestopping work at each location, provide labels stating the following:
 - Firestop System: Do Not Disturb
 - Manufacturer's Name and Product

State of Michigan
.gov
719 Griswold St

2012108

Bids and Permit
February 7, 2013

UL Classified System Design Number

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 07 9200 - JOINT SEALANTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. The required applications of joint sealant include, but not necessarily limited to, the following GENERAL LOCATIONS.
 - 1. Interior exposed non-traffic joints including, but not limited to, the following:
 - a. Control and expansion joints.
 - b. Doors and windows.
 - c. Toilet fixtures.
 - d. Countertops.
 - e. Equipment.
 - f. Other joints shown and/or indicated.
 - 2. Joints in flooring materials, as indicated and required.
 - 3. Isolation joints between structure and other elements.
 - 4. Acoustic and other types of separation joints.

1.03 REFERENCES

- A. ASTM C 834 - Standard Specification for Latex Sealants; 2005.
- B. ASTM C 919 - Standard Practice for Use of Sealants in Acoustical Applications; 2008.
- C. ASTM C 1193 - Standard Guide for Use of Joint Sealants; 2009.
- D. ASTM C 1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants; 2002.
- E. ASTM D 1056 - Standard Specification for Flexible Cellular Materials--Sponge or Expanded Rubber; 2007.
- F. ASTM D 1667 - Standard Specification for Flexible Cellular Materials--Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam); 2005 (Reapproved 2011).

1.04 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants produced and installed to establish and maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.
- B. Provide joint sealants for interior applications produced and installed to establish and maintain airtight continuous seals that are water resistant and cause no staining or deterioration of joint substrates.

1.05 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: Manufacturer's technical product data and test reports evidencing compliance with requirements.
 - 1. Provide Architect each specific location and use of each sealant and color.
 - 2. Provide MSDS indicating product VOC limits.
- C. Samples: Manufacturer's standard bead samples, consisting of strips of actual products showing full range of colors available, for each product exposed to view.
- D. Compatibility and adhesion test reports from sealant manufacturer, indicating materials forming joint substrates and sealant backings have been tested for compatibility and adhesion with joint sealants. Include manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation methods required.

- E. Pre-construction field test reports indicating which products and joint preparation methods demonstrate acceptable adhesion to joint substrates.

1.06 QUALITY ASSURANCE

- A. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each product required.
- B. Pre-construction Joint Sealant-Substrate Tests: Submit substrate materials representative of actual joint surfaces to joint sealant manufacturer for laboratory testing of joint sealants for adhesion to primed and unprimed substrates and for compatibility with joint substrates and other joint related materials.
- C. Pre-construction Field Tests: Prior to installation of joint sealants, field-test their adhesion to joint substrates as follows:
 - 1. Locate test joints as directed by Architect.
 - 2. Conduct field test for each type of sealant and each type of application.
 - 3. Perform test with manufacturers technical representative present.
 - 4. Test joint sealants by hand method per ASTM C 1193 and/or AAMA Aluminum Curtain Wall Series No. 13.

1.07 FIELD MOCK-UP

- A. Prior to start of sealant work, apply beads of sealant to each substrate in field, to verify colors selected by Architect.
 - 1. Provide sealant mock-up for each substrate and each color of substrate.
 - 2. Sealant beads shall be minimum 24 inches long.
 - 3. Sealant colors shall be same colors selected by Architect.
- B. Do not proceed with building sealant work until sealant colors used for field mock-ups are verified by Architect.

1.08 PROJECT CONDITIONS

- A. Joint Width Conditions: Do not proceed with installation of joint sealant when joint widths are less than allowed by joint sealant manufacturer for application indicated.
- B. Joint Substrate Conditions: Do not proceed with installation of joint sealant until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer or below 40 degF.
 - 2. When joint substrates are wet due to rain, frost, condensation or other causes.

1.10 WARRANTY

- A. Correct defective work within a five year period after Date of Substantial Completion.
- B. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealant, joint fillers and other related materials compatible with one another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience.
- B. Colors: Provide colors of exposed joint sealants selected by Architect from manufacturer's full range of standard colors.

2.02 LATEX JOINT SEALANT

- A. Acrylic-Emulsion Sealant: Manufacturer's standard, one-part, nonsag, mildew resistant, paintable latex sealant per ASTM C 834, formulated for exposed applications on interior and on protected exterior locations involving joint movement of not more than plus or minus 5 percent.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. "Chem-Calk 600"; Bostik Construction Products Div.
 - b. "AC-20"; Pecora Corp. (VOC 31 g/L)
 - c. "Sonolac"; BASF Construction Chemicals. (VOC 41 g/L)
 - d. "Tremflex 834"; Tremco, Inc. (VOC 11 g/L)
 - 2. Use for all exposed interior joints, except flooring, and where moving, or acoustic, and where shown or required.

2.03 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant For Concealed Joints: Manufacturer's standard, non-drying, nonhardening, nonskinning, nonstaining, gunnable synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of air-borne sound.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. "AIS-919 Acoustical and Insulation Sealant"; Pecora Corp. (VOC 31 g/L)
 - b. "Tremco Acoustical Sealant"; Tremco, Inc. (VOC 155 g/L)

2.04 JOINT SEALANT BACKING

- A. Nonstaining, compatible with joint substrates, sealants, primers and other joint fillers; approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Sealant Backing Material: Preformed, compressible, resilient, nonwaxing, nonextruding strips of plastic foam of material indicated below, and of size, shape and density to control sealant depth and produce optimum sealant performance.
 - 1. Nongassing, closed-cell polyethylene rod per ASTM C 1330, subject to approval of sealant manufacturer.
- C. Elastomeric Tubing Joint Fillers: Neoprene, butyl, EPDM, or silicone tubing per ASTM D 1056, nonabsorbent to water and gas, capable of remaining resilient at temperatures down to -26 degF (-15 degC). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth and otherwise contribute to optimum sealant performance.
- D. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing bond between sealant and joint filler or other materials at back of joint.

2.05 MISCELLANEOUS MATERIALS

- A. Primer: Type recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from pre-construction joint sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Nonstaining, chemical cleaners of type which are acceptable to manufacturer's of sealants and sealant backing materials, not harmful to substrates and adjacent nonporous materials, and do not leave oily residues or otherwise have a detrimental effect on sealant adhesion or in-service performance.
- C. Masking Tape: Nonstaining, nonabsorbent type compatible with joint sealants and to surfaces adjacent to joints.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions that affect joint sealant performance.
 - 1. Do not proceed with joint sealant installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturers and the following requirements:
 - 1. Remove all foreign material from joint substrates which could interfere with adhesion of joint sealant, including dust; paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; oil; grease; water; and surface dirt.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air. Porous surfaces include, but are not limited to, the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed ceramic tile.
 - 3. Clean nonporous surfaces by chemical cleaners or other means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealants. Non-porous surfaces include, but are not limited to, the following:
 - a. Metal.
 - b. Glass.
 - c. Glazed surfaces of ceramic tile.
 - 4. Remove laitance and form-release agents from concrete.
- B. Joint Priming: Prime joint substrates where indicated or recommended by joint sealant manufacturer. Confine primers to areas of joint sealant bond; do not allow spillage or migration to other surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be stained or damaged by such contact or by cleaning methods to remove smears. Remove tape immediately after tooling joint sealant.

3.03 INSTALLATION

- A. Comply with manufacturer's printed instructions, except where more stringent requirements are shown or specified, and except where manufacturer's technical representative directs otherwise.
- B. Support sealant from back with backer rod, joint filler, or as recommended by manufacturer.
- C. Sealant Installation Standard: ASTM C 1193.
- D. Acoustical Sealant Installation Standard: ASTM C 919; for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
- E. Installation of Sealant Backings: As follows:
 - 1. Install joint fillers of type indicated to support sealants during application and at position to allow optimum sealant joint geometry and optimum sealant movement capability.
 - a. Do not stretch, twist, puncture, or tear joint fillers. Do not leave gaps between ends of joint filler pieces.
 - 2. Install bond break tape between sealants and substrates where backer rods are not used.
- F. Installation of Sealant:

1. Place sealants in manner to directly contact and fully wet joint substrates.
2. Completely fill recesses provided for each joint configuration.
3. Place uniform, cross sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

3.04 CLEANING AND PROTECTION

- A. Clean off excess sealant or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealant and of products in which joints occur.
- B. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so they are without deterioration or damage at time of substantial completion.
 1. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealant immediately and reseal joints with new materials so repaired areas are indistinguishable from original work.

END OF SECTION

SECTION 08 1113 - HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Steel doors.
- B. Steel door frames.

1.03 REFERENCES

- A. ANSI A250.6 - Hardware on Standard Steel Doors (Reinforcement - Application); 2003.
- B. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 2003.
- C. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 1998 (R2011).
- D. ANSI A250.11 - Recommended Erection Instructions for Steel Frames; 2001.
- E. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2005.
- F. ASTM A 568/A568M Standard Specification for Steel, Sheet, Carbon, Structural and High Strength, Low Alloy, Hot Rolled and Cold Rolled General Requirements for '
- G. ASTM A 879/A879M Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface; 2006
- H. ASTM A 1008/A 1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability; 2007.
- I. ASTM A 1011/A 1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability; 2007.
- J. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus; 2005.
- K. DHI A115 Series - Specifications for Steel Doors and Frame Preparation for Hardware; Door and Hardware Institute; current edition (ANSI/DHI A115 Series).
- L. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association; 2013.
- M. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: Provide manufacturer's specifications for fabrication and installation, including data substantiating products comply with requirements.
- C. Shop Drawings: For fabrication and installation of steel door and frame work. Indicate details of each frame type, elevation of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
- D. Door Schedule: Submit schedule of doors and frames using same reference numbers for details and openings as those on Contract Drawings.
 - 1. Indicate coordination of glazing frames and stops with glass and glazing requirements.

1.05 QUALITY ASSURANCE

- A. Provide doors and frames per ANSI 250.8/SDI 100 "Recommended Specifications for Standard Steel Doors and Frames" and as specified.
- B. Fire-Rated Door Assemblies: Units per NFPA 80, are identical to door and frame assemblies tested for fire-test-response characteristics per ANSI/UL10C, and are labeled and listed by UL, Warnock Hersey, or other testing and inspection agency acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver steel doors and frames cardboard wrapped or crated to provide protection during transit and job storage.
- B. Inspect steel door and frame work upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise remove and replace damaged item as directed.
- C. Store doors and frames at the building site under cover. Place units on minimum 4-inch high wood blocking. Avoid use of non-vented plastic or canvas shelters, which could create a humidity chamber. If cardboard wrappers on doors become wet, remove carton immediately. Provide 1/4-inch spaces between stacked doors to promote air circulation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ceco Door Products.
 - 2. Curries Co.
 - 3. Mesker Door, Inc.
 - 4. Pioneer Industries, Inc.
 - 5. Steelcraft, an Ingersoll Rand Brand
- B. Substitutions: See Section 01 2500 - Substitution Procedures.

2.02 MATERIALS

- A. Steel Sheet for Doors and Frames:
 - 1. Cold rolled steel: ASTM A 1008/A 1008M, Designation CS.
 - 2. Hot rolled steel: Pickled and oiled, ASTM A 1011/A 1011M, Designation CS Type B.
- B. Steel Sheet for Anchors and Accessories: Electrolytically deposited zinc coated steel; ASTM A 591/A 591M, coating 40Z (12G), minimum.
- C. Hardware Reinforcement: Per ANSI A250.6 "Hardware on Standard Steel Doors (Reinforcement Application)".
- D. Inserts, Bolts and Fasteners: Manufacturer's standard units, except hot-dip galvanize items to be built into exterior walls and where interior units scheduled as galvanized, per ASTM A 153, Class C and D as applicable.
- E. Shop-Applied Paint: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as base for specified finish paints on steel surfaces.

2.03 DOORS

- A. Provide flush design doors, 1-3/4 inch thick, seamless hollow construction, per ANSI 250.8 requirements with door top closures, unless otherwise indicated. Bevel both vertical edges 1/8 inch in 2 inches.
 - 1. Provide filler of fiberboard, mineral-wool board, or other insulating material solidly packed full height to fill voids between inner core reinforcing members.

- B. Interior Doors: Fabricate doors of two outer, cold-rolled, stretcher-leveled steel sheets. Construct doors with smooth, flush surfaces, without visible joints or seams on exposed faces or stile edges, except around glazed openings.
 - 1. Face Sheet Thickness: 18-gage.
 - 2. Door Level and Model: Level 2, Model 2; Heavy duty, seamless construction.

2.04 FRAMES

- A. Provide steel frames, of types and styles shown on the Drawings and schedules, per ANSI 250.8 requirements. Conceal fastenings, unless otherwise indicated. Fabricate frames of sizes and profiles indicated, for the following:
- B. Fabricate frames of full-welded unit construction with corners mitered, reinforced, continuously welded full depth and width of frame. Knockdown type frames are not acceptable.
 - 1. Form interior frames of cold-rolled sheet steel.
 - 2. Gage: As follows;
 - a. Interior openings:
 - 1) 16 gage, for openings up to and including 4'-0".
- C. Jamb Anchors: Furnish jamb anchors as required to secure frames to adjacent construction formed of not less than 18 gage galvanized steel.
 - 1. Metal Stud Partitions: Insert type with notched clip to engage metal stud, welded to back of frames. Provide at least 4 anchors for each jamb for frames up to 7'-6" in height; 5 anchors up to 8'-0" jamb height; one additional anchor for each 24 inches or fraction thereof over 8'-0" height.
 - 2. In-Place Concrete or Masonry: Anchor frames with minimum 3/8 inch concealed bolts into expansion shields or inserts at 6 inches from top and bottom and 26 inches o.c. unless otherwise shown. Reinforce frames at anchor locations. Except for fire-rated openings, apply removable stop to cover anchor bolts, unless otherwise indicated.
- D. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, formed of not less than 14-gage galvanized steel sheet, clip type with 2 holes to receive fasteners, welded to bottom of jambs and mullions.
- E. Head Anchors: Provide 2 anchors at head of frames exceeding 42 inches wide for frames mounted in steel stud walls.
- F. Structural Reinforcing Members: Provide as part of frame assembly, where indicated at mullions, or other locations, which are to be built into frame.
- G. Head Reinforcing: For frame over 4'-0" wide in masonry wall openings, provide continuous steel channel or angle stiffener, not less than 12 gage for full width of opening, welded to back of frame at head.
- H. Spreader Bars: Provide removable spreader bar across bottom of frames, tack welded to jambs and mullions.
- I. Door Silencers: Except on weather-stripped doors, drill stops in strike jamb to receive 3 silencers on single-door frames and drill head jamb stop to receive 2 silencers on double-door frames. Install plastic plugs to keep holes clear during construction.
 - 1. Provide supply of manufacturer's standard rubber silencers in quantity not less than twice required for project.
- J. Plaster/Mortar 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.

2.05 FABRICATION

- A. Fabricate steel door and frame units to be rigid, neat in appearance, and free from defects, warp or buckle. Wherever practicable, fit and assemble units in 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. Comply with ANSI/SDI 100 requirements.

1. Internal Construction: One of the following manufacturer's standard core materials per SDI standards:
 - a. Resin-impregnated paper honeycomb.
 - b. Rigid polystyrene per ASTM C 578.
 - c. Unitized steel grid.
 - d. Vertical steel stiffeners.
2. Clearances: Not more than 3/32 inch at head and jambs, not more than 1/8 inch at meeting stiles of non-fire rated pairs of doors. Not more than 5/8 inch at bottom.
- B. Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled sheet steel.
- C. Tolerances: Comply with SDI 117 "Manufacturing Tolerances for Standard Steel Doors and Frames".
- D. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold- or hot-rolled sheet steel.
- E. Hardware Preparation: Prepare hollow metal units to receive finish hardware in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of SDI 107 and ANSI A 115 Series specifications for door and frame preparation for hardware.
 1. Reinforce hollow metal units to receive surface-applied hardware in conformance with ANSI A 250.6. Drilling and tapping for surface-applied hardware may be done at Project site.
 2. Locate finish hardware as shown on final shop drawings, or if not shown, in accordance with the Door and Hardware Institute's (DHI) "Recommendation Locations for Architectural Hardware for Standard Steel Doors and Frames"
- F. Glazing Stops: Minimum 20 gage sheet steel or 0.040 inch thick aluminum.
 1. Provide non-removable stops on outside of exterior doors and on secure side of interior doors for glass.

2.06 FINISHES, GENERAL

- A. Comply with SSPC-PA 1, "Paint Application Specification No. 1", for steel sheet finishes.
- B. Apply primers and organic finishes to doors and frames after fabrication.

2.07 STEEL SHEET FINISHES

- A. Surface Preparation: Solvent-clean surfaces per SSPC-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel per SSPC-SP 5 (White Metal Blast Cleaning) or SSPC-SP 8 (Pickling).
- B. Pretreatment: Immediately after surface preparation, apply a conversion coating of type suited to organic coating applied over it.
- C. Factory Priming for Field-Painted Finish: Apply shop primer that complies with ANSI A250.10 acceptance criteria, is compatible with finish paint systems indicated, and has capability to provide a sound foundation for field-applied topcoats. Apply primer immediately after surface preparation and pretreatment.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions under which steel door and frame work is to be installed. Notify Construction Manager in writing of conditions detrimental to proper and timely completion of work.
 1. Do not proceed with work until unsatisfactory conditions have been corrected in an acceptable manner.

3.02 INSTALLATION

- A. Install steel door and frame units and accessories in accordance with final shop drawings, manufacturer's data and as specified.
- B. Placing Frames: Comply with ANSI 250.11 and DHI A115, unless otherwise indicated. 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.
 - 1. In metal-stud partitions, install minimum 3 anchors per jamb at hinge and strike levels. In steel-stud partitions, attach anchors to studs with screws.
 - 2. In masonry construction, install minimum 3 anchors per jamb adjacent to hinge location on hinge jamb and at corresponding locations on strike jamb. Anchors include masonry wire anchors and masonry T-shape strap anchors.
- C. Door Installation: Fit steel doors accurately in frames, within clearances specified in ANSI 250.8.
 - 1. Non-Fire-Rated Doors: Fit non-fire-rated steel doors accurately in their respective frames with the following clearances:
 - a. Jambs and Head: 3/32 inch.
 - b. Meeting Edges, Pairs of Doors: 1/8 inch.
 - c. Bottom: 5/8 inch where no threshold or carpet; 1/8 inch at threshold or carpet.
 - 2. Fire-Rated Doors: Install with clearances specified in NFPA 80.

3.03 ADJUSTING

- A. Final Adjustments: Leave work in complete and proper operating condition. Remove and replace defective work, including doors or frames warped, bowed or otherwise unacceptable.
- B. Test sound control doors for force to close, latch, and unlatch; adjust as required to comply.
- C. Prime Coat Touch-Up: Immediately after erection, sand smoothly any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

END OF SECTION

SECTION 08 4226 - ALL-GLASS ENTRANCES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Interior doors.
- B. Sidelights.
- C. Partition system.

1.03 REFERENCES

- A. AA DAF-45 - Designation System for Aluminum Finishes; The Aluminum Association, Inc.; 2003.
- B. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2004.
- C. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 1998.
- D. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2006.
- E. ASTM B 455 - Standard Specification for Copper-Zinc-Lead Alloy (Leaded-Brass) Extruded Shapes; 2010.
- F. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 2011.
- G. NAAMM AMP 500 through 505 - Metal Finishes Manual for Architectural and Metal Products; The National Association of Architectural Metal Manufacturers; 1988.

1.04 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: For each type of product specified. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes.
- C. Shop Drawings: Show details of fabrication and installation, including the following:
 - 1. Plans, elevations, and sections.
 - 2. Details of fittings.
 - 3. Hardware quantities, locations, and installation requirements.
 - 4. Anchorages and reinforcement.
 - 5. Glazing details.
- D. Samples for Verification: Of size indicated below and of same thickness and material indicated for Work. Show the full range of color and texture variations expected.
 - 1. Metal Finishes: 6-inch-long sections of patch fittings, rails, and other items.
 - 2. Glass: 6 inches square showing exposed-edge finish.
- E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing all-glass entrances similar to this Project and with a record of successful in-service performance.
- B. Source Limitations: Obtain each type of all-glass entrance through one source from a single manufacturer.
- C. Product Options: Drawings indicate size, profiles, and dimensional requirements of all-glass entrances and are based on the specific system indicated. Other manufacturers' systems with equal performance characteristics may be considered.

- D. Do not modify intended aesthetic effects, as judged solely by the Architect, except with Architect's approval and only to the extent needed to comply with performance requirements. Where modifications are proposed, submit comprehensive explanatory data to Architect for review.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Store products of this section in manufacturer's unopened packaging until installation.
- C. Protect finished metal surfaces with strippable coating. Do not use adhesive papers or sprayed coatings which bond to metal when exposed to sunlight or weather.

1.07 PROJECT CONDITIONS

- A. Field Measurements: Verify opening dimensions of all-glass entrances by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating all-glass entrances without field measurements. Coordinate construction to ensure actual opening dimensions correspond to established dimensions.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Submit a written warranty executed by manufacturer agreeing to repair or replace components of all-glass entrances that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:
 - 1. Structural failures.
 - 2. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 3. Failure of operating components to function normally.
- C. Warranty Period: 3 year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. C.R. Laurence Co. / Blumcraft
 - 2. Guardian Industries Corp.
 - 3. Oldcastle Glass Group.
 - 4. Virginia Glass Products Corp.
 - 5. Vistawall Architectural Products
- B. Substitutions: See Section 01 2500 - Substitution Procedures.

2.02 MATERIALS

- A. Glazing: Laminated glass. Refer to Section 08 80 00.
 - 1. Thickness: Minimum as required by spans but not less than 3/8 inch
 - 2. Color: Clear
 - 3. Exposed Edges: Flat polished
 - 4. Butt Edges: Flat ground
- B. Aluminum: ASTM B 221, alloy 6063-T5, alloy and temper recommended by manufacturer for use and finish indicated.
- C. Silicone Sealant: Low modulus one-part silicone sealant for use in butt glazing. Sealant shall accommodate a 50 percent increase or decrease of joint width as measured at time of application in accordance with ASTM C 719.
 - 1. Manufacturer/Product:

- a. Dow Corning 790; Dow Corning Corp.
- b. Silpruf; General Electric Co.

2.03 COMPONENTS

- A. Entrance Door Fittings:
 - 1. Type: Patch rail at top and bottom pivot corners of door.
 - 2. Exposed metal:
 - a. Material: Extruded aluminum.
 - b. Finish: Clear anodized.
- B. Sidelight Rails:
 - 1. Match profile, material, and finish of rails specified for doors.
 - 2. Supply top and bottom installation track for sidelite installation.

2.04 ACCESSORIES

- A. Accessory Fittings: Manufacturer's standard accessory fittings matching patch fitting or rail metal and finish.
 - 1. Overhead doorstop.
 - 2. Center-housing lock.
- B. Anchors and Fastenings: Manufacturer's standard concealed anchors and fastenings.

2.05 HARDWARE

- A. Door Hardware: Specified in Section 08 7100.

2.06 FABRICATION

- A. Fabricate all-glass entrance components in sizes, profiles, and configurations indicated.
 - 1. Provide holes and cutouts in glass to receive hardware, fittings, rails, and accessories before tempering glass. Do not cut, drill, or make other alterations to glass after tempering.
 - 2. Fully temper glass using horizontal roller hearth process.
 - 3. Factory assemble components and factory install hardware to greatest extent possible.

2.07 ALUMINUM FINISHES

- A. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.
- B. Class I, Clear Anodic Finish: AA-M21C22A41 (Mechanical Finish: smooth specular, buffed; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) per AAMA 611.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of all-glass entrances. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install all-glass entrances and associated components according to manufacturer's written instructions.
- B. Set units level and plumb.
- C. Maintain uniform clearances between adjacent components.
- D. Lubricate hardware and other moving parts according to manufacturer's written instructions.
- E. Set, seal, and grout floor closer cases as required by hardware and substrate.

3.03 ADJUSTING

- A. Adjust doors and hardware to provide tight fit at contact points and weather stripping, smooth operation, and weathertight closure.

3.04 CLEANING AND PROTECTION

- A. Remove excess sealant and glazing compounds and dirt from all-glass entrance surfaces.
- B. Provide final protection and maintain conditions, in manner acceptable to manufacturer and Installer, to ensure all-glass entrances are without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 087100 – FINISH HARDWARE

PART 1 - GENERAL

1.1 Refer to "General and Special Conditions", and "Instructions to Bidders", Division 1 of Specifications. Requirements of these Sections and the project drawings shall govern work in this section.

1.2 Work Included

- A. Furnish all items of Finish Hardware specified, scheduled, shown or required herein except those items specifically excluded from this section of the specification.
- B. Related Work
 - 1. Division 1 – General Requirements
 - 2. Division 6 – Rough Carpentry
 - 3. Division 6 – Finish Carpentry: Installation of Finish Hardware
 - 4. Division 8 – Steel Doors and Frames
 - 5. Division 8 – Wood Doors
 - 6. Division 8 – Aluminum Framed Entrances and Storefronts
 - 7. Division 16 – Smoke Detection Systems
 - 8. Division 16 – Security Access Systems
- C. Specific Omissions: Hardware for the following is specified or indicated elsewhere, unless specifically listed in the hardware sets:
 - 1. Cabinet Hardware.
 - 2. Signs, except as noted.
 - 3. Folding partitions, except cylinders where detailed.
 - 4. Sliding aluminum doors
 - 5. Chain link and wire mesh doors and gates
 - 6. Access doors and panels
 - 7. Overhead and Coiling doors

1.3 Quality Assurance

- A. Requirements of Regulatory Agencies:
 - 1. Furnish finish hardware to comply with the requirements of laws, codes, ordinances, and regulations of the governmental authorities having jurisdiction where such requirements exceed the requirements of the Specifications.
 - 2. Furnish finish hardware to comply with the requirements of the regulations for public building accommodations for physically handicapped persons of the governmental authority having jurisdiction and to comply with Americans with Disabilities Act.
 - 3. Provide hardware for fire-rated openings in compliance with NFPA 80 and state and local building code requirements. Provide only hardware that has been tested and listed by UL for types and sizes of doors required and complies with requirements of door and door frame labels.
- B. Hardware Supplier:

1. Shall be an established firm dealing in contract builders' hardware. He must have adequate inventory, qualified personnel on staff and be located within 100 miles of the project. The distributor must be a factory-authorized dealer for all materials required. The supplier shall be or have in employment an Architectural Hardware Consultant. (AHC)

C. Electrified Door Hardware Supplier:

1. Shall be an experienced door hardware supplier who has completed projects with electrified door hardware 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, and who is acceptable to manufacturer of primary materials.
2. Shall prepare data for electrified door hardware, including shop drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this project.
3. Shall have experience in providing consulting services for electrified door hardware installations.

D. Pre-installation Meeting:

1. Before hardware installation, General Contractor/Construction Manager will request a hardware installation seminar be conducted on the installation of hardware; specifically that of locksets, closers, exit devices, overhead stops and coordinators. Manufacturer's representatives of the above products, in conjunction with the hardware supplier for the project, shall present the seminar. Seminar to be held at job site and attended by installers of hardware for aluminum, hollow metal and wood doors. Seminar to address proper coordination and installation of hardware, per finish hardware schedule for this specific project, by using installation manuals, hardware schedule, templates, physical product samples and installation videos.
2. When any electrical or pneumatic hardware is specified this meeting shall also include the following trades/installers: Electrical, Security, Alarm systems and Architect.
3. Convene one week prior to commencing work of this Section
4. The Hardware Supplier shall include the cost of this seminar in his proposal.

E. Manufacturer:

1. Obtain each type of hardware (latch and locksets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.
2. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated.

1.4 Submittals

A. Hardware Schedule

1. Submit number of Hardware Schedules as directed in Division 1.
2. Follow guidelines established in Door & Hardware Institute Handbook (DHI) Sequence and Format for the Hardware Schedule unless noted otherwise.
3. Schedule will include the following:
 - a. Preface sheet listing category only and manufacturer's names of items being furnished as follows:

CATEGORY	SPECIFIED	SCHEDULED
Hinges	Manufacturer A	Manufacturer B

Lock sets	Manufacturer X	Manufacturer X
Kick Plates	Open	Manufacturer Z

- b. Hardware Locations: Refer to Article 3.1 B.2 Locations.
- c. Opening Description: Single or pair, number, room locations, hand, active leaf, degree of swing, size, door material, frame material, and UL listing.
- d. Hardware Description: Quantity, category, product number, fasteners, and finish.
- e. Headings that refer to the specified Hardware Set Numbers.
- f. Scheduling Sequence shown in Hardware Sets.
- g. Product data of each hardware item, and shop drawings where required, for special conditions and specialty hardware.
- h. Electrified Hardware system operation description.
- i. "Vertical" scheduling format only. "Horizontal" schedules will be returned "Not Approved."
- j. Typed Copy.
- k. Double-Spacing.
- l. 8-1/2 x 11 inch sheets
- m. U.S. Standard Finish symbols or BHMA Finish symbols.

B. Product Data:

- 1. Submit, in booklet form Manufacturers Catalog cut sheets of scheduled hardware.
- 2. Submit product data with hardware schedule.

C. Samples:

- 1. Prior to submittal of the final hardware schedule and prior to final ordering of finish hardware, submit one sample, if required, of each type of exposed hardware unit, finished as required and tagged with full description for coordination with schedule.
- 2. Samples will be returned to the supplier. Units, which are acceptable and remain undamaged through submittal, review and field comparison procedures may, after final check of operation, be used in the work, within limitations of keying coordination requirements.

D. Key Schedule:

- 1. Submit detailed schedule indicating clearly how the Owner's final keying instructions have been followed.
- 2. Submit as a separate schedule.

E. Electrified Hardware Drawings:

- 1. Submit elevation drawings showing relationship of all electrical hardware components to door and frame. Indicate number and gage of wires required.
 - a. Include wiring drawing showing point to point wire hook up for all components.
 - b. Include system operations descriptions for each type of opening; describe each possible condition.

F. Submit to General Contractor/Construction Manager, the factory order acknowledgement numbers for the various hardware items to be used on the project. The factory order acknowledgement numbers shall help to facilitate and expedite any service that may be required on a particular hardware item. General Contractor/Construction Manager shall keep these order acknowledgement numbers on file in the construction trailer.

1.5 Product Delivery, Storage, and Handling

- A. Label each item of hardware with the appropriate door number and Hardware Schedule heading number, and deliver to the installer so designated by the contractor.

1.6 Warranties

- A. Mortise locksets shall carry manufacturer's 3-year warranty against manufacturing defects and workmanship.
- B. Closers shall carry manufacturer's 10-year warranty against manufacturing defects and workmanship.
- C. Exit devices shall carry manufacturer's 3-year warranty against manufacturing defects and workmanship.
- D. Continuous gear hinges shall carry manufacturer's Lifetime warranty to be free from defects in material and workmanship.
- E. Balance of items shall carry a manufacturer's 1-year warranty against manufacturing defects and workmanship.
- F. During the warranty period, replace defective work, including labor, materials and other costs incidental to the work. Inspect the work within 24 hours after receipt of notice from the Owner. Replace work found to be defective as defined in the General Conditions.

PART 2 - PRODUCT

- 2.1 Furnish each category with the products of only one manufacturer unless specified otherwise; this requirement is mandatory whether various manufacturers are listed or not.**

- 2.2 Provide the products of manufacturer designated or if more than one manufacturer is listed, the comparable product of one of the other manufacturers listed. Where only one manufacturer or product is listed, it is understood that this is the owner's Building Standard and "no substitution" is allowed.**

- A. Hinges:
 - 1. Products listed in sets are Ives CB1 series.
 - 2. Equal products of any B.H.M.A. member will also be acceptable.
- B. Center Hung Pivot Sets:
 - 1. Products listed in sets are Rixson model 117-3/4. (No Substitutions)
- C. Locksets and Latchsets:
 - 1. Locks are to have a standard 2 3/4" backset.
 - 2. Grade 1 Mortise Type function numbers are Sargent 8200 series with "LNB" lever trim. (No substitutions)

3. Provide strikes with extended lips where required to protect trim from being marred by latch bolt. Provide strike lips that do not project more than 1/8" beyond door frame trim at single doors and have 7/8" lip to center at pairs of 1-3/4" doors.
- D. Electric Strikes:
1. Products listed in sets are Von Duprin 6000 series.
 - a. Folger Adam 300 series.
- E. Glass Door Pulls:
1. Back to Back Mounted Pull Sets: Rockwood 1-1/4" diameter model RM3701-60" Back to Back mounted with Type 13 mounting.
 2. Manufacturer: Provide push and pull hardware from any member of B.H.M.A.
- F. Surface Closers:
1. Refer to door and frame details and furnish accessories such as drop plates, panel adapters, spacers and supports as required to correctly install door closers. State degree of door swing in the hardware schedule.
 2. IR-LCN 4000 Series as listed in sets. Cast Iron closers from the following manufacturers will also be acceptable.
 - a. Sargent 281
- G. Concealed Closers:
1. IR-LCN model 3031 as listed in sets. (No Substitutions)
- H. Overhead Holders and Stops:
1. Type, function and fasteners must be same as Glynn-Johnson specified. Size per manufacturer's selector chart. Plastic end caps, hold open mechanisms and shock blocks are not allowed. End caps must be finished same as balance of unit.
 2. Manufacture products using base material of Brass/Bronze for US3, US4, & US10B finished products and 300 Stainless Steel for US32 & US32D finished products.
 3. Type, function, and fasteners must be the same as Glynn-Johnson specified. Size per manufacturer's selector chart.
 - a. Equal products of any B.H.M.A. member will also be acceptable.
- I. Wall Stops:
1. Products listed in sets are Ives WS series.
 2. Equal products of any B.H.M.A. member will also be acceptable.
- J. Floor Stops:
1. Products listed in sets are Rockwood model 446.
 2. Equal products of any B.H.M.A. member will also be acceptable.
- K. Miscellaneous:
1. Furnish items not categorized in the above descriptions but specified by manufacturer's names in Hardware Sets.

L. Fasteners:

1. Furnish fasteners of the proper type, size, quantity and finish. Use machine screws and expansion shields for attaching hardware to concrete or masonry, and wall grip inserts at hollow wall construction. Furnish machine screws for attachment to reinforced hollow metal doors and frames and reinforced aluminum doors and frames. Furnish full thread wood screws for attachment to solid wood doors and frames. "TEK" type screws are not acceptable.
2. Sex bolts will not be permitted on reinforced metal doors or wood doors where blocking is specified.

2.3 Finishes:

- A. Provide finish for each item as indicated in sets.

2.4 Templates and Hardware Location:

- A. Furnish hardware made to template. Supply required templates and hardware locations to the door and frame manufacturers.
- B. Furnish metal template to frame/door supplier for continuous hinge.
- C. Refer to Article 3.1 B.2, Locations, and coordinate with templates.

2.5 Cylinders and Keying:

- A. Furnish cylinders factory keyed to a new Sargent Signature Patented and Restricted standard core system according to the owner's instructions. Furnish two keys per cylinder and grand and master keys as required.

PART 3 - EXECUTION

3.1 Installation

3.2 General:

1. Install hardware according to manufacturers' installations and template dimensions. Attach all items of finish hardware to doors, frames, walls, etc. with fasteners furnished and required by the manufacture of the item.
2. Reinforced hollow metal doors and frames and reinforced aluminum door and frames will be drilled and tapped for machine screws.
3. Solid wood doors and frames: full thread wood screws. Drill pilot holes before inserting screws.
4. Continuous gear hinges attached to hollow metal doors and frames and aluminum doors and frames: 12-24 x 1/2" #3 Phillips Keenform self-tapping. Use #13 or 3/16 drill for pilot.
5. Install weather-strip gasket prior to parallel arm closer bracket, rim exit device or any stop mounted hardware. Gasket to provide a continuous seal around perimeter of door

opening. Allow for gasket when installing finish hardware. Door closers will require special templating. Exit devices will require adjustment in backset.

B. Locations:

1. Dimensions are from finish floor to center line of items.
2. Include this list in Hardware Schedule.

<u>CATEGORY</u>	<u>DIMENSION</u>
Hinges	Door Manufacturer's Standard
Levers	Door Manufacturer's Standard
Push Pulls	Per Architectural Elevation
Push Plates	52"
Pull Plates	42"
Wall Stops/Holders	At Head
Astragals	Pull side of active leaf

C. Final Adjustment:

1. Provide the services of a representative to inspect material furnished and its installation and adjustment, to make final hardware adjustment, and to instruct the Owner's personnel in adjustment, care and maintenance of hardware.
2. Locksets, closers and exit devices shall be inspected by the factory representative and adjusted after installation and after the HVAC system is in operation, to insure correct installation and proper adjustment in operation. The manufacturer's representative shall prepare a written report stating compliance, and also recording locations and kinds of noncompliance. The original report shall be forwarded to the Architect with copies to the Contractor, hardware distributor, hardware installer and building owner.

D. Technical and Warranty Information:

1. At the completion of the project, the technical and warranty information coalesced and kept on file by the General Contractor/Construction Manager shall be given to the Owner or Owner's Agent. In addition to both the technical and warranty information, all factory order acknowledgement numbers supplied to the General Contractor/Construction Manager during the construction period shall be given to the Owner or Owner's Agent. The warranty information and factory order acknowledgement numbers shall serve to both expedite and properly execute any warranty work that may be required on the various hardware items supplied on the project.
2. Submit to General Contractor/Construction Manager, two copies each of parts and service manuals and two each of any special installation or adjustment tools. Include for locksets, exit devices, door closers and any electrical products.

3.3 Hardware Sets:

HW SET: 01

1	SET	CENTER HUNG PIVOT	128-3/4	626	RIX
1	EA	STOREROOM LOCK	10-8204 LNB	626	SAR
1	EA	ELECTRIC STRIKE	6211 FSE 24VDC	630	VON
1	EA	LOCK HOUSING	MORTISE LOCK	630	GEN
1	EA	STRIKE HOUSING	ELECTRIC STRIKE	630	GEN
2	EA	"U" CHANNEL	BY GLASS DOOR SUPPLIER	630	GEN
1	EA	CONCEALED CLOSER	3131 X ST-1486	689	LCN
1	EA	FLOOR STOP	446	626	ROC
1	EA	DOOR POSITION SWITCH	679-05 HM	BLK	SCE
1	EA	PIN PAD READER	BY SECURITY CONTRACTOR		B/O
1	EA	POWER SUPPLY	BY SECURITY CONTRACTOR		B/O
1	EA	REX MOTION SENSOR	BY SECURITY CONTRACTOR		B/O
1	EA	ANGLE STOP	AS18	626	IVE

OPERATION: THE PIN PAD READER WILL RELEASE THE ELECTRIC STRIKE FOR ENTRY. THE INSIDE LEVER WILL PERMIT EGRESS AT ALL TIMES. THE DOOR POSITION SWITCH AND REX MOTION SENSOR ARE MONITORED BY THE SECURITY SYSTEM.

HW SET: 02

3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	POWER TRANSFER	EPT-10	689	VON
1	EA	FSE STOREROOM LOCK	10-RX-8271 LNB	626	SAR
1	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 34"	630	IVE
1	EA	WALL STOP	WS33	626	IVE
1	SET	SMOKE SEAL	2525B	BRN	NGP
1	EA	DOOR POSITION SWITCH	679-05 HM	BLK	SCE
1	EA	CARD READER	BY SECURITY CONTRACTOR		B/O
1	EA	POWER SUPPLY	BY SECURITY CONTRACTOR		B/O

HW SET: 03

1	SET	CENTER HUNG PIVOT	128-3/4	626	RIX
1	SET	BTB PULL	RM3701-60"	630	ROC
1	EA	CONCEALED CLOSER	3131 X ST-1486	689	LCN
1	EA	FLOOR STOP	446	626	ROC
1	EA	ANGLE STOP	AS18	626	IVE

HW SET: 04

3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	POWER TRANSFER	EPT-10	689	VON
1	EA	FSE STOREROOM LOCK	10-RX-8271 LNB	626	SAR
1	EA	SURFACE CLOSER	4111 SCUSH	689	LCN
1	EA	WALL STOP	WS33	626	IVE
1	SET	SMOKE SEAL	2525B	BRN	NGP
1	EA	DOOR POSITION SWITCH	679-05 HM	BLK	SCE
1	EA	CARD READER	BY SECURITY CONTRACTOR		B/O
1	EA	POWER SUPPLY	BY SECURITY CONTRACTOR		B/O

HW SET: 05

3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	10-8237 LNB	626	SAR
1	EA	WALL STOP	WS407CCV	630	IVE

HW SET: 06

3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	10-8204 LNB	626	SAR
1	EA	SURFACE CLOSER	4111 SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 34"	630	IVE

HW SET: 07

3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	10-8204 LNB	626	SAR
1	EA	SURFACE CLOSER	4111 SCUSH	689	LCN

HW SET: 08

1	SET	CENTER HUNG PIVOT	128-3/4	626	RIX
1	EA	STOREROOM LOCK	10-8204 LNB	626	SAR
1	EA	ELECTRIC STRIKE	6211 FSE 24VDC	630	VON
1	EA	LOCK HOUSING	MORTISE LOCK	630	GEN
1	EA	STRIKE HOUSING	ELECTRIC STRIKE	630	GEN
2	EA	"U" CHANNEL	BY GLASS DOOR SUPPLIER	630	GEN
1	EA	CONCEALED CLOSER	3131 X ST-1486	689	LCN
1	EA	FLOOR STOP	446	626	ROC
1	EA	DOOR POSITION SWITCH	679-05 HM	BLK	SCE
1	EA	CARD READER	BY SECURITY CONTRACTOR		B/O
1	EA	POWER SUPPLY	BY SECURITY CONTRACTOR		B/O
1	EA	REX MOTION SENSOR	BY SECURITY CONTRACTOR		B/O
1	EA	ANGLE STOP	AS18	626	IVE

OPERATION: THE CARD READER WILL RELEASE THE ELECTRIC STRIKE FOR ENTRY. THE INSIDE LEVER WILL PERMIT EGRESS AT ALL TIMES. THE DOOR POSITION SWITCH AND REX MOTION SENSOR ARE MONITORED BY THE SECURITY SYSTEM.

HW SET: 09

3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	10-8237 LNB	626	SAR
1	EA	SURFACE CLOSER	4011	689	LCN
1	EA	WALL STOP	WS407CCV	630	IVE

END OF SECTION

SECTION 08 8000 - GLAZING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Types and applications of glass and glazing required include:
 - 1. Conventional glazing.

1.03 REFERENCES

- A. ASTM C 864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005.
- B. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 2010.
- C. ASTM C 1048 - Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass; 2004.
- D. ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass; 2009e1.
- E. ASTM E 1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2012a.
- F. GANA (GM) - GANA Glazing Manual; Glass Association of North America; 2004.
- G. GANA (SM) - GANA Sealant Manual; Glass Association of North America; 2008.
- H. GANA (LGDG) - Laminated Glass Design Guide; Glass Association of North America; 2006.

1.04 PERFORMANCE REQUIREMENTS

- A. Provide glass and glazing produced, fabricated and installed to withstand normal thermal movement, wind loading, impact loading (where applicable), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glass and glazing materials, and other defects in the work.
- B. Glass Selection: Glass thicknesses indicated on Drawings are for detailing purposes only. Establish glass thicknesses including composite assemblies by analyzing design loads and in-service conditions. Provide glass lites for the various size openings in thicknesses, strengths (annealed or heat-treated) and assemblies whose performance will ensure compliance with the following:
 - 1. System performance requirements for aluminum window wall systems.
 - 2. System performance requirements for aluminum entrances and storefronts.
 - 3. Nominal minimum monolithic glass thickness of 0.25 inch.
- C. Selection Criteria: Select minimum glass thicknesses, whether annealed or heat-treated, so that minimum probability of failure does not exceed the following:
 - 1. 8 lites per 1000 for lites set vertically or not over 15 degrees and under off vertical for wind action. Determine minimum glass thickness of monolithic annealed per ASTM E 1300. When other than monolithic annealed glass, determine thickness using glass manufacturer's standard method of analysis including applying adjustment factors to ASTM E 1300 based on types of glass.
 - 2. 1 lite per 1000 for lites set over 15 degrees off vertical under action of wind and snow.
- D. Thermal Criteria: Normal thermal movement results form 120 degF (67 degC) maximum change (range) in ambient and 180 degF (100 degC) surface temperatures acting on glass-framing members and glazing components. Base engineering calculations on materials' actual surface temperatures due to both solar heat gain and nighttime sky heat loss.

1.05 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.

- B. Product Data: Provide manufacturer's technical data for each glass product and glazing material required, including installation and maintenance instructions.
- C. Shop Drawings: Submit shop drawings, including calculations and comprehensive engineering analyses, for the following glass systems.
 - 1. Structural glazing systems, including attachment devices.
 - 2. Sloped glazing systems.
 - 3. Shop Drawings and calculations shall be prepared and sealed by a Professional Engineer licensed in the State in which the Project is located.
- D. Certification: Submit written certification from respective manufacturers attesting glass and glazing materials furnished for project comply with requirements.
 - 1. Separate certification will not be required for glazing materials bearing manufacturer's permanent labels designating type and thickness of glass, provided labels represent a quality control program involving a recognized certification agency or independent testing laboratory acceptable to authorities having jurisdiction.
 - 2. Certify secondary seals of insulated glass units are compatible with all glazing materials it will come in contact with (including structural silicone sealant) and that insulating glass seals will withstand structural loading requirements.
- E. Compatibility and Adhesion Test Report: Submit statement from sealant manufacturer indicating glass and glazing materials have been tested for compatibility and adhesion with glazing sealants and interpreting test results relative to material performance, including recommendations for primers and substrate preparation needed to obtain adhesion.
- F. Compatibility test report from manufacturer of insulated glass unit edge sealant indicating glass edge sealants were tested for compatibility with other glazing materials including sealants, glazing tape, gaskets, setting blocks, and edge blocks.
- G. Product test reports for each type of glazing sealant and gasket indicated, evidencing compliance with specific requirements.
- H. Qualification Data: Submit written information to establish installer qualifications, demonstrating capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information as required.

1.06 QUALITY ASSURANCE

- A. Single Source Responsibility for Materials: Provide materials produced by a single manufacturer for each kind and condition of material indicated.
- B. Single Source Responsibility for Fabrication and Installation: Engage a fabricator/installer who shall assume undivided responsibility for all components of structural glazing work, including structural design and weatherproof integrity of the system in place.
- C. Safety Glazing Standard: Where safety glass is indicated or required by authorities having jurisdiction, comply with CPSC 16 CFR Part 1201, Category II.
 - 1. Provide safety glass permanently marked with certification label of Safety Glazing Certification Council (SGCC) or other agency acceptable to authorities having jurisdiction.
- D. Pre-Construction Compatibility and Adhesion Testing: Submit samples of all materials including glass, glazing material and accessories, and framing support members proposed for use in contact with or proximity of glazing including structural sealant, to sealant manufacturer for compatibility and adhesion testing in accordance with sealant manufacturer's standard testing methods and the following requirements:
 - 1. Submit not less than four pieces of each type and finish of glass framing member and of each type, glass, kind, condition and form (monolithic, laminated, insulating units) of glass for adhesion testing and one sample of glazing material substrates (gaskets, setting blocks, spacers, etc.) for compatibility testing.
 - 2. Testing is not required when glazing sealant manufacturer can submit required preparation data acceptable to Architect; based on previous testing of current sealant products for adhesion to and compatibility with submitted glazing materials.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Protect glass and glazing materials during delivery, storage, and handling to comply with manufacturer's directions and as required to prevent edge damage to glass, and damages to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and other causes.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes. Install glazing sealants only when temperatures are in middle third of manufacturer's recommended installation temperature range.
 - 1. Install liquid sealants at ambient and substrate temperature above 40 degF (4 degC).

1.09 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Laminated Glass: Provide written warranty signed by laminated glass manufacturer agreeing to remove and replace laminated glass units that deteriorate or have manufacturing defects. Warranty covers deterioration and defects due to normal conditions of use and not handling, installing, and cleaning practices contrary to glass manufacturer's published instructions.
 - 1. Warranty Period: Five (5) years after date of substantial completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers of Clear Float and Tinted Glass:
 - 1. AGC Flat Glass North America.
 - 2. Guardian Industries Corp.
 - 3. Pilkington
 - 4. PPG Industries, Inc.
- B. Manufacturers of Heat-Treated Glass:
 - 1. AGC Flat Glass North America.
 - 2. Guardian Industries Corp.
 - 3. Oldcastle Glass Group.
 - 4. Viracon, Inc.
- C. Manufacturers of and Products for Preformed Butyl-Polyisobutylene Glazing Tape:
 - 1. Chem-Tape 60; Bostik Construction Products Div.
 - 2. Shim-Seal; Pecora Corp.
 - 3. PTI 303 Glazing Tape; Protective Treatments, Inc.
 - 4. POLYshim II Tape; Tremco, Inc.
- D. Substitutions: See Section 01 2500 - Substitution Procedures.

2.02 HEAT-TREATED GLASS PRODUCTS

- A. Manufacturing Process: Manufacturer heat-treated glass by horizontal (roller hearth) process with roll wave distortion parallel with bottom edge of glass as installed.
- B. Heat-Treated Glass Standard: ASTM C 1048.
 - 1. Uncoated, Clear, Heat-Treated Float Glass: Condition A (uncoated surfaces), Type 1 (transparent flat glass), Class 1 (clear), Quality Q3 (glazing select), Kinds FT (fully tempered) and HS (heat strengthened).

2.03 LAMINATED GLASS PRODUCTS

- A. Refer to primary, heat-treated and coated requirements relating to properties of glasses making up laminated glass products.
- B. Laminated Glass Standard: ASTM C 1172.

- C. Plastic Interlayer: DuPont "SentryGlas Plus". NO SUBSTITUTION PERMITTED.
- D. Laminating Process: Fabricate laminated glass using laminators's standard heat-plus-pressure process to produce glass free from foreign substances and air/glass pockets.
- E. Laminated Safety Glass: Two panes of equal thickness glass laminated together with a plastic interlayer and complying with requirements indicated below.
 - 1. Laminated Glass Characteristics: Float glass complying with requirements for thickness and kind of each pane (ply) indicated below:
 - a. Thickness: 1/8 inch each pane.
 - b. Kind HS (heat strengthened).
 - c. Outer Pane: Clear glass.
 - d. Plastic Interlayer Color:
 - 1) Color: Clear.
 - 2) Thickness: Minimum of 0.030 inch or as required to comply with safety requirement.
 - e. Inner Pane: Clear glass.

2.04 GASKETS

- A. Gaskets: Glazing gaskets shall be EPDM elastomeric extrusions, per ASTM C 864, and of type that securely locks into glazing reglet to prevent gasket from disengaging.

2.05 GLAZING SEALANTS AND TAPES

- A. General: Provide products of type indicated and complying with the following requirements:
 - 1. Compatibility: Select glazing sealants and tapes of proven compatibility with other materials with which they will come into contact, including glass products, seals of insulating glass units, and glazing channel substrates under conditions of installation and service, as demonstrated by testing and field experience.
 - 2. Suitability: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants and tapes which have performance characteristics suitable for applications indicated and condition at time of installation.
 - 3. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for Type, Grade, Class, and Uses.
 - 4. Colors: As selected by Architect from manufacturer's standard color range.
- B. Preformed Glazing Tape: Butyl-based formulation with solids content of 100 percent; in extruded tape form; non-staining and non-migrating in contact with nonporous surfaces; packaged in rolls with release paper on one side; with or without continuous spacer rod as recommended by manufacturers of tape and glass for application indicated, per ASTM C 1281 and AAMA 806.3/807.3.

2.06 MISCELLANEOUS GLAZING MATERIALS

- A. Compatibility: Provide materials with proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Type recommended by sealant, tape or gasket manufacturer.
- C. Setting Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealants, 80 to 90 Shore A Durometer hardness.
 - 1. Setting Blocks for Structural Glazing: Minimum 4 inches in length to provide 0.1 inch of length per square foot of glass area; Shore A Durometer 85 plus or minus 5.
- D. Spacers: Neoprene, EPDM or silicone blocks, or continuous extrusions, as required for compatibility with glazing sealant and tape, of size, shape and hardness recommended by glass and sealant manufacturers for application indicated.
 - 1. Preformed spacer for structural glazing shall be selected on basis of adherence or non-adherence required by system design.

- E. Edge Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealant and tape, of size and hardness required to limit lateral movement (side-walking) of glass.
- F. Compressible Filler Rods: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, flexible and resilient, with 5-10 PSI compression strength for 25 percent deflection.

2.07 FABRICATION

- A. Fabricate glass to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer.
- B. Temper or heat strengthen glass where indicated or required for compliance with safety glass regulations or recommended by manufacturer/fabricator for size or thermal stress.
- C. Clean cut or flat grind vertical edges of butt-glazed monolithic lights in manner to produce square edges with slight kerfs.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Require Glazier to inspect work of glass framing erector and existing conditions for compliance with:
 - 1. Manufacturing and installation tolerances including those for size, squareness, offsets at corners
 - 2. For existence of minimum required face or edge clearances.
 - 3. For effective sealing of joinery.
- B. Obtain Glazier's written report listing conditions detrimental to performance of glazing work.
 - 1. Do not allow glazing work to proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean glazing channels and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrate.

3.03 GLAZING, GENERAL

- A. Comply with combined printed recommendations of glass manufacturers, manufacturers of sealants, tapes, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing publications.
- B. Glazing channel dimensions as indicated in details are intended to provide for necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.
- C. Protect glass from edge damage during handling and installation as follows:
 - 1. Use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar.
 - 2. Rotate glass with flares or bevels along one horizontal edge so these would occur in vicinity of setting blocks located at top of opening.
 - 3. Remove damaged glass from Project site and legally dispose of off-site. Damaged glass is glass with edge damage or other imperfections that, when installed, weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants as determined by pre-construction sealant-substrate testing.
- E. Provide spacers as follows:
 - 1. Locate spacers inside, outside, and directly opposite each other. Install correct size and spacing to preserve required face clearances.
 - 2. Provide not less than 1/8 inch bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.

3.04 GLAZING INSTALLATION

- A. Install setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but with edge nearest corner not closer than 6" from corner, unless otherwise required. Set blocks in thin course of sealant acceptable for heel bead use.
- B. Provide spacers inside and out, of correct size and spacing to preserve required face clearances, for glass sizes larger than 50 united inches (length plus height), except where gaskets or glazing tapes with continuous spacer rods are used for glazing. Provide 1/8 inch minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.
- C. Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.
- D. Provide compressible filler rods or equivalent back-up materials, as recommended by sealant and glass manufacturers, to prevent sealant from extruding into glass channel weep systems and from adhering to back surface of joints as well as to control depth of sealant for optimum performance, unless otherwise indicated.
- E. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant, tape or gasket on opposite side, provide adequate anchorage to ensure gasket will not "walk" out when installation is subjected to movement.
- F. Miter cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent pull away at corners; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.05 CLEANING AND PROTECTION

- A. Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove non-permanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.
- C. Remove and replace glass which is broken, chipped, cracked, abraded, or damaged in other ways during construction period, including natural causes, accidents, and vandalism.
- D. Wash glass on both faces not more than four days prior to date scheduled for inspections intended to establish date of Substantial Completion in each area of project.
 - 1. Wash glass by method recommended by glass manufacturer.
- E. Exercise extreme care in handling, installation and protection of spandrel glass and glass products with shatter resistant film. Repair or replace any damaged coatings or surfaces as acceptable to and determined solely by Architect.

END OF SECTION

SECTION 09 2116 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Acoustic insulation.
- D. Gypsum wallboard.
- E. Joint treatment and accessories.
- F. Acoustical bulkheads above operable partitions.

1.03 REFERENCE STANDARDS

- A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.
- C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).
- D. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2011a.
- E. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- F. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011.
- G. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2011.
- H. ASTM C 919 - Standard Practice for Use of Sealants in Acoustical Applications; 2008
- I. ASTM C954 - 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; 2011.
- J. ASTM C1002 - 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.
- K. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2011.
- L. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction Materials; 2008a.
- M. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2010.
- N. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

- A. See Section 01 33 23 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
- C. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system. Provide manufacturer's specifications and installation instructions for each gypsum wallboard component, including other data as required to show compliance construction documents.

- D. Fire Test Response Reports: For all shaftwall products provide reports from a qualified independent testing and inspecting agency substantiating that each gypsum board shaftwall assembly required fire-resistance rating.
 - 1. Include data substantiating that elevator entrances and other items penetrating each gypsum board shaft-wall assembly do not negate fire-resistance rating.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing gypsum board application and finishing, with minimum 5 years of documented experience.
- B. Fire-Test-Response Characteristics: Where fire-rated gypsum board assemblies are indicated, provide assemblies to comply with the following:
 - 1. Provide gypsum board assemblies with materials and construction identical to those assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
 - 2. Fire Resistance Ratings: As indicated by reference to GA File Numbers in GA-600 "Fire Resistance Design Manual", to design designations in UL "Fire Resistance Directory" or in listing of other testing and inspecting agency acceptable to authorities having jurisdiction.
- C. Source Limitations: Obtain each type of steel framing, gypsum board and finishing materials through one source, from a single manufacturer.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.
- C. Handle board materials to prevent damage to edges, ends and surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Environmental Conditions: Establish and maintain environmental conditions for application and finishing gypsum board per ASTM C 840 and with gypsum board manufacturer's recommendations.
- B. Minimum Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40 degF (4 degC). For adhesive attachment and finishing of gypsum board maintain not less than 50 degF (10 degC) for 48 hours prior to application and continuously thereafter until drying is complete.
- C. Ventilate building spaces to remove water not required for drying joint treatment materials. Avoid drafts during dry, hot weather to prevent materials from drying too rapidly.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
- B. Fire Rated Assemblies: Provide completed assemblies with UL Design numbers as indicated on Drawings.
 - 1. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL Fire Resistance Directory.

2.02 METAL FRAMING MATERIALS

- A. Manufacturers - Metal Framing, Connectors, and Accessories:
 - 1. Clarkwestern Dietrich Building Systems LLC: www.clarkdietrich.com.
 - 2. Telling Industries: www.tellingindustries.com
 - 3. State Building Products

- B. Non-Loadbearing Framing System Components: ASTM C 645; galvanized sheet steel ASTM A653, G40 hot dip, of size and properties necessary to comply with ASTM C 754 for the spacing indicated, with maximum deflection of wall framing of L/360 at 5 psf.
 - 1. Studs: "C" shaped with flat or formed webs with knurled faces.
 - a. Minimum thickness: 22 gage or 22 EQ, unless otherwise noted.
 - b. Minimum thickness for the following locations, 0.0329 inch (20 gage) or 20 EQ:
 - 1) For head runner, sill runner, jamb and cripple studs at door and other openings.
 - 2) In locations to receive backer boards.
 - 3) In locations to receive abuse resistant or impact resistant board material.
 - c. Extend studs full height (floor to deck), unless otherwise indicated.
 - 2. Runners: U shaped, sized to match studs.
 - 3. Steel Flat Strap and Backing Plate: Manufacturer's proprietary steel backer for blocking or bracing. Sheet steel per ASTM A 653, length and width as indicated, and with minimum base metal (uncoated) thickness of 0.0598 inch thick (16 ga.).
 - a. Manufacturers - Steel Backing Plate:
 - 1) Metal-Lite, Inc.; Notch-Tite and/or Flush Mount.
 - 4. Bridging/Bracing Bar: Engineered, pre-notched, 20 gage galvanized sheet steel spacer bar for interior metal stud walls.
 - a. Manufacturers - Bridging/Bracing Bar:
 - 1) Dietrich Metal Framing; Spazzer Bar
 - 2) Steel Network, Inc.; Bridge Bar
 - 3) Clark Western Building Systems; Katz Bridging Bar
 - 5. Header/Sill System: Preformed, pre-engineered header/sill, minimum 20 gage, galvanized sheet steel for use at openings in metal stud wall systems.
 - a. Manufacturers - Header/Sill System:
 - 1) Brady Construction Innovations, Inc.; Pro X Header
- C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
 - 1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
 - 2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.
 - a. Manufacturers - Deflection Track:
 - 1) Total Steel Solutions; Snap Track
 - 2) Sliptrack Systems; SLP-TRK
 - 3) Steel Network, Inc.; VertiTrack VTD
 - 3. Provide components UL-listed for use in UL-listed fire-rated head of partition joint systems of fire rating and movement required.
 - 4. Deflection and Firestop Track:
 - a. Provide mechanical anchorage devices as described above that accommodate deflection while maintaining the fire-rating of the wall assembly.
 - b. Manufacturers - Deflection/Firestop Track:
 - 1) Fire Track Corporation; Fire Trak

2.03 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
 - 1. CertainTeed Corporation: www.certainteed.com.
 - 2. Georgia-Pacific Gypsum: www.gpgypsum.com.
 - 3. Lafarge North America Inc: www.lafargenorthamerica.com.
 - 4. National Gypsum Company: www.nationalgypsum.com.
 - 5. USG Corporation: www.usg.com.

- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Thickness: Provide gypsum board in thickness indicated, or if not otherwise indicated, in 5/8 inch thickness.
 - 2. Application: Use for vertical surfaces, unless otherwise indicated.
 - a. Types:
 - 1) Regular, unless otherwise indicated.
 - 2) Type X for fire-resistant rated assemblies and where indicated.meeting a
 - b. Edges: Tapered.
 - 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. Paper-Faced Products:
 - a. CertainTeed Corporation; ProRoc Brand Gypsum Board.
 - b. Lafarge North America Inc; Regular Drywall and Firecheck Type X and Type C.
 - c. National Gypsum Company; Gold Bond Brand Gypsum Wallboard.
 - d. USG Corporation; Sheetrock Brand Gypsum Panels.
 - 5. Factory Applied Level 5 Finish Board: LaFarge North America, Inc; Rapid Deco for use with Rapid Deco joint compound.

2.04 ACCESSORIES

- A. Partition Closures: Extruded aluminum adjustable spring loaded partition closures.
 - 1. Location: All junctures of partitions with other construction as indicated.
 - 2. Fill closure with acoustical batt insulation.
 - 3. Finish: Match curtainwall system.
 - 4. Products:
 - a. Gordon Inc.; Mullion Mate
- B. Partition End Caps: Extruded aluminum end cap with tapered fin to accent joint materials.
 - 1. Location: Provide at locations of all partition closures and other locations indicated.
 - 2. Size: As required for wall thickness.
 - 3. Finish: Match curtainwall system
 - 4. Products:
 - a. Gordon Inc.; 911-EC
- C. Acoustic Insulation: ASTM C 665, Type 1 (unfaced) mineral fiber blanket, friction fit type, unfaced, in thicknesses indicated.
 - 1. Mineral Fibers: Fibers manufactured from glass, slag wool or rock wool.
- D. Extruded Aluminum Reveals: 6063 T5 Alloy with chemical conversion coating.
 - 1. Products: Fry Reglet Corporation; Shapes as indicated on Drawings
- E. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
 - 1. Tape:
 - a. Paper faced Gypsum Board: Paper reinforcing tape
 - 2. Ready-mixed (Drying Type) vinyl-based joint compound: All purpose compound formulated for use as both a taping and topping compound. Use for finish coat only.
 - 3. Chemical (Setting Type) hardening joint compound. Use as follows:
 - a. For taping and filling.
 - b. For Pre-filling gypsum board joints.
 - c. For filling joints and treating fasteners of backing board behind base for ceramic tile.
 - d. For topping compound, use sandable formulation.
- F. High Build Drywall Surfacers: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating in achieving Level 5 finish.
 - 1. Product: USG Corporation; Sheetrock Brand TUFF-HIDE

- G. 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, corrosion resistant at backer boards.
- H. 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.
- I. Spot Grout: Setting type joint compound for type recommended for spot grouting hollow metal door frames, ASTM C475.
- J. Laminating Adhesive: Manufacturers recommended adhesive or joint compound recommended for laminating gypsum boards.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates to which board attaches or abuts, installed hollow metal frames, cast in anchors and structural framing with installer(s) present for compliance with requirements for installation tolerances and other conditions affecting performance of gypsum board assemblies specified in this Section.
 - 1. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Install supplementary framing, blocking and bracing at terminations in work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, door bumpers, furnishings and similar construction to comply with details indicated and with recommendations of gypsum board manufacturer, or if none available, with "Gypsum Construction Handbook", published by United States Gypsum Co.
- C. Isolate steel framing from building structure to prevent transfer of loading imposed by structural movement, at locations indicated below to comply with details shown on drawings.
 - 1. Where suspended ceiling assemblies abut building structure horizontally at ceiling perimeters or penetrations of ceiling.
 - 2. Where partition and wall framing abut overhead structure.
 - a. Provide slip or cushioned type joints to attain lateral support and avoid axial loading.
- D. Do not bridge building expansion and control joints with steel framing or furring members, independently frame both sides of joints with framing or furring members or as indicated.
- E. Studs and furring: Space studs and furring as indicated.
 - 1. Single-Layer Construction: Space studs 16 inches o.c., unless otherwise indicated.
 - 2. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at or just above suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
 - a. Cut studs 1/2 inch short of full height to provide perimeter relief.
 - b. For STC-rated or fire-resistance rated partitions that extend full height, install framing around structural members, as required to support gypsum board closures needed to make partitions continuous from floor to underside of structure above.
 - c. Install bridging/spacing bar.
 - 3. Brace partition framing, not extending full height to structure above, with studs same size and thickness as partition framing. Provide bracing at:
 - a. 6'-0" o.c. intervals along length of partitions.
 - b. Not less than 6'-0" from partition ends and corners.
 - c. Door and window openings.
 - 4. Terminate partition framing at suspended ceilings where indicated.
 - 5. Install steel studs with flanges in same direction and leading edge or end of gypsum board panel can be attached to open (unsupported) edges of stud flanges first.

6. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
7. Install runners (tracks) at floors, ceilings and structural walls and columns where gypsum board stud system abuts other construction.
 - a. Use proprietary tracks for non-rated and fire rated walls and partitions.
 - b. Install studs full height for all partitions unless noted otherwise.
 - c. Where studs are installed directly against exterior walls, install asphalt felt/foam isolation strips between studs and wall.
8. Installation Tolerances: Install each steel framing and furring member so that fastening surface does not vary more than 1/8 inch from plane of faces of adjacent framing.
- F. Frame door openings to comply with details indicated, with GA-216 and with applicable published recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 1. Extend vertical jamb studs through suspended ceilings and attach to underside of floor or roof structure above.
- G. Frame openings other than door openings to comply with details indicated, or if none indicated, in same manner as required for door openings; and install framing below sills of openings to match framing required above door heads.
- H. Blocking: Install blocking for support of:
 1. Framed openings.
 2. Wall mounted cabinets.
 3. Wall mounted door hardware.
 4. Other locations as indicated on Drawings.

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. Install acoustic insulation where indicated, prior to gypsum board, unless readily installed after board has been installed on one side.
- B. Acoustic Sealant: Install as follows:
 1. Place two beads continuously on substrate before installation of perimeter framing members.
 2. Set concealed (back) edge of gypsum board in a continuous bead of sealant laid at base/head of runner at perimeter of each partition.
 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, GA-216, and manufacturer's instructions.
- B. Install wall/partition boards in manner to minimize end-butt joints or avoids them entirely where possible. At high walls, install boards horizontally with end joints staggered over studs.
 1. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 24 inches in alternate courses of board.
- C. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for light contact at edges and ends with not more than 1/16 inch open space between boards. Do not force into place.
- D. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints.

1. Position boards so like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends.
2. Do not place tapered edges against cut edges or ends.
3. Stagger vertical joints over different studs on opposite sides of partitions.
- E. Attach gypsum board to steel studs so leading edge or end of each board is attached to open (unsupported) edge of stud flange first.
- F. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.
- G. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors and doors over 32 inches wide except where full grout shown. Apply spot grout at each jamb anchor clip just before inserting board into frame.
- H. Form control joints and expansion joints at locations indicated or as recommended, with space between edges of boards, prepared to receive trim accessories.
 1. Provide fire-rated construction for control joints in rated walls and partitions to maintain fire rating.
- I. Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above ceiling, etc.), except in chase walls which are braced internally.
 1. Except where concealed application is indicated or required for sound, fire, air or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. area, and may be limited to not less than 75 percent of full coverage.
 2. Fit gypsum board around ducts, pipes and conduits.
- J. Isolate perimeters of non-load-bearing drywall partitions at structural abutments. Provide 1/4 to 1/2 inch space and trim edge with "U" bead edge trim. Seal joints with acoustical sealant unless fire resistant sealant shown.
- K. Where STC-rated gypsum board assemblies are indicated, seal construction at perimeters, behind control and expansion joints, openings, and other penetrations with a continuous bead of acoustical sealant. Include a bead of sealant at both faces of partitions.
 1. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim and closing off sound flanking paths around or through gypsum board assemblies, including partitions extending above ceilings.
 2. At operable partitions provide acoustical bulkhead with STC-rated assembly matching the STC of operable partition below.
- L. Space fasteners in gypsum board in accordance with referenced gypsum board application and finishing standard and manufacturer's recommendations.

3.05 METHODS OF GYPSUM BOARD APPLICATION

- A. Single-Layer Application: Install gypsum wallboard as follows:
 1. On ceilings apply gypsum board prior to wall/partition board application to greatest extent possible.
 2. On partitions/walls apply gypsum board vertically (parallel to framing), unless otherwise indicated or required by fire resistance rated assembly, and provide sheet lengths which will minimize end joints.
 - a. On partitions/walls 8'-1" or less in height, apply gypsum board horizontally (perpendicular to framing); use maximum length sheets possible to minimize end joints.
 - b. At stairwells and other high walls, install gypsum board horizontal, unless otherwise indicated or required for fire resistance rating.
 - c. On Z-furring, apply gypsum panels vertically (parallel to framing). Locate edge joints over furring member.
- B. Single-Layer Fastening Methods: Apply gypsum boards to metal supports with screws and to wood supports with nails.

- C. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

3.06 INSTALLATION OF TRIM AND ACCESSORIES

- A. General: Where feasible, use same fasteners to anchor trim accessory flanges as required to fasten gypsum board to supports. Otherwise, fasten flanges to comply with manufacturer's recommendations.
- B. Install corner beads at external corners.
- C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound except where "U" bead (semi-finishing type) is indicated.
 - 1. Install "LC" bead where drywall construction is tightly butted to other construction and back flange can be attached to framing or supporting substrate.
 - 2. Install "LK" bead where substrate is kerfed to receive long flange of trim.
 - 3. Install "L" bead where edge trim can only be installed after gypsum board is installed.
 - 4. Install U-type trim where edge is exposed, gasketed or sealant-filled (including expansion joints).
- D. Install control joints at locations indicated, or if not indicated, at spacings and locations required by ASTM C 840 and manufacturer's recommendations; and approved by Architect for visual effect.
- E. Install reveals at locations indicated.

3.07 JOINT TREATMENT

- A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim and control joints; penetrations; fastener heads, surface defects and elsewhere as required to prepare work for decoration.
- B. Prefill open joints using setting-type joint compound.
- C. Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.
- D. Finish interior gypsum wallboard by applying the following joint compounds in three coats (not including prefill of openings in base), sand between coats, and after last coat.
 - 1. Embedding and First Coat: Setting-type joint compound.
 - 2. Fill (Second) Coat: Setting-type joint compound.
 - 3. Finish (Third) Coat: Ready-mix drying all-purpose or topping compound.
- E. Partial Finishing: Omit third coat and sanding on concealed drywall construction indicated for drywall finishing or which requires finishing to achieve fire-resistance rating, sound rating or to act as air or smoke barrier.
- F. Finish gypsum board in accordance with levels defined in Gypsum Association GA-214 "Recommended Levels of Gypsum Board Finish, as follows:
 - 1. Level 1: Ceiling plenum areas and concealed areas, except provide higher level of finish as required to comply with fire resistance ratings and acoustical ratings.
 - a. Embed tape in joint compound. Tool marks and ridges are acceptable.
 - 2. Level 2: Gypsum board substrate at tile, except remove tool marks and ridges.
 - a. Embed tape in joint compound and apply first coat of compound. Cover fastener heads with joint compound.
 - 3. Level 3: Gypsum board substrate at areas of textured finishes and heavy duty wall coverings.
 - a. Embed tape in joint compound and apply first and second coats of compound. Cover fastener heads with 2 coats of joint compound.
 - 4. Level 4: Gypsum board surfaces, except where another finish level is indicated.
 - a. Embed tape in joint compound and apply first, second, and finish coats of compound over joints, angles, fastener heads, and accessories. Touch up and sand between

coats and after last coat to produce a surface free of visual defects, ready for decoration.

5. Level 5: At walls scheduled to receive markerboard paint and where indicated.
 - a. Embed tape in joint compound and apply first, second, and finish coats of compound over joints, angles, fastener heads, and accessories. Apply a thin, uniform skim coat of joint compound over entire surface. Touch up and sand between coats and after last coat to produce a surface free of visual defects, tool marks, and ridges ready for decoration.
 - 1) Where manufacturer's proprietary systems are being provided for level 5 finish comply with manufacturer's written instructions for application.
- G. 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.
- H. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.08 PARTITION IDENTIFICATION

- A. Place identification on all partitions indicated on Drawings as requiring opening protectives, including walls having a required fire or smoke rating, or lead lining.
- B. Identification shall be as follows:
 1. Type: Use same rating/designation as indicated on drawing legend and include the words "Protect all openings".
 2. Location: 10 feet on center, both sides of partitions, above ceiling lines.
 - a. Place above access panels in hard ceilings.
 3. Style of Lettering: 2 inches high, helvetica style, painted with aid of stencils.
 4. Color: Red.

3.09 CLEANING AND PROTECTION

- A. Promptly remove any residual joint compound from adjacent surfaces.
- B. Provide final protection and maintain conditions, in manner suitable to Installer, to ensure gypsum board assemblies are without damage or deterioration at time of Substantial Completion.

3.10 TOLERANCES

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

END OF SECTION

SECTION 09 5113 - ACOUSTICAL PANEL CEILINGS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Acoustical panel ceilings and grid systems as shown on Drawings and in Schedules.
 - 1. Acoustical panel ceilings are designated on the Room Finish Schedule as Acoustical Ceiling Type 1 (AC-1), Type 2 (AC-2), etc.

1.03 REFERENCES

- A. ASTM A 641/A 641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2003.
- B. ASTM C 635/C 635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2009b.
- C. ASTM C 636/C 636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels; 2006.
- D. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2006.
- E. ASTM E 580/E 580M - Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint; 2009a.
- F. ASTM E 1264 - Standard Classification for Acoustical Ceiling Products; 2008.
- G. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- H. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: Provide manufacturer's product technical data and installation instructions for each acoustical ceiling panel, suspension system and trim products required.
- C. Samples for Verification Purposes: Submit samples of each type of exposed finish required, of size indicated below and of same thickness and material indicated for final unit of Work. Where finishes involve normal color and texture variations, include sample sets showing full range of variations expected.
 - 1. 6 inch by 6 inch samples of each acoustical panel pattern and color required.
 - 2. Set of 12 inch long samples of exposed suspension system members, including moldings for each color and system type required.
- D. Product Test Reports: Submit testing reports prepared by qualified independent testing laboratory based on testing of current products for compliance of acoustical ceiling systems and components which specified requirements.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Not less than 3 years of successful experience in installation of acoustical ceilings similar to this project and is acceptable to the manufacturer of acoustical units.
- B. Single-Source Responsibility for Ceiling Units: Obtain each type of acoustical ceiling unit from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
- C. Single-Source Responsibility for Suspension System: Obtain each type of suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

- D. Fire Performance Characteristics: Provide acoustical ceilings identical to those tested for the following fire performance characteristics, per ASTM test method indicated, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction. Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.
 - 1. Surface Burning Characteristics: As follows, tested per ASTM E 84, and complying with ASTM E 1264 for Class A products.
 - a. Flame Spread: 25 or less.
 - b. Smoke Developed: 50 or less.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver acoustical ceiling units to project site in original, unopened packages and store in a fully enclosed space, protected against damage from moisture, direct sunlight, surface contamination or other causes.
- B. Before installing acoustical ceiling units, permit units to reach room temperature and a stabilized moisture content.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

1.07 PROJECT CONDITIONS

- A. Space Enclosure: Do not install interior acoustical ceilings until wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.
- B. Coordination of Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with work of other trades that penetrate ceilings or is supported by them, including light fixtures, HVAC equipment and partition system.
 - 1. Coordinate with cubicle systems track.

PART 2 PRODUCTS

2.01 ACOUSTICAL CEILING UNITS, GENERAL

- A. Standard for Acoustical Ceiling Units: Provide manufacturer's standard units of configuration indicated per ASTM E 1264 classifications as designated by reference to types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
 - 1. Mounting Method for Measuring NRC: Type E-400 (plenum mounting in which face of test specimen is 15-3/4 inches (400 mm) away from the test surface per ASTM E 795.
 - 2. Test Method for Ceiling Attenuation Class (CAC): Where acoustical panel ceilings are specified to have a CAC, provide units identical to those tested per ASTM E 1414 by a qualified testing agency.
- B. Colors and Patterns: Provide products as indicated on Room Finish Schedule.

2.02 METAL SUSPENSION SYSTEMS

- A. Reuse existing where indicated on Drawings.
- B. Standard for Metal Suspension Systems: Provide manufacturer's standard metal suspension system of type, structural classification and finish indicated per ASTM C 635 requirements.
 - 1. Finishes and Colors: Provide manufacturer's standard factory-applied finish for type of system indicated.
 - a. Color: White.
- C. Wide-Faced Capped Double-Web Steel Suspension System: Main and cross members roll-formed from prepainted or electrolytic zinc-coated cold-rolled steel sheet, with 15/16 inch wide metal caps on flanges; other characteristics as follows:
 - 1. Structural Classification: Intermediate-Duty System.
 - 2. End Condition of Cross-Runners: Butt-edge type.
 - 3. Cap Material and Finish: Steel sheet painted.
 - 4. T's (including cross members): Not less than 1-1/2 inches high fabricated from not less than 0.016 inch thick metal.

5. Product: Subject to compliance with requirements, provide one of the following:
 - a. Prelude ML; Armstrong World Industries, Inc.
 - b. DX System; USG Interiors, Inc.

2.03 SUSPENSION SYSTEM ACCESSORIES

- A. Attachment Devices: Size for 4 times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
- B. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.
 1. Gage: Provide wire sized so that stress at 3 times hanger design load (ASTM C 635, Table 1, Direct-Hung), will be less than yield stress of wire, but provide not less than 0.106 inch diameter (12 gage).
- C. Edge Moldings and Trim: Metal of types and profiles indicated, or if not indicated, manufacturer's standard moldings for edges and penetrations that fit type of edge detail and suspension system indicated.
 1. For circular penetrations of ceiling, provide edge moldings prefabricated to diameter required to fit penetration exactly.
 - a. Manufacturer/Product: Pittcon Industries "Column Collars".

2.04 MISCELLANEOUS MATERIALS

- A. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. AC-20 FTR Acoustical and Insulation Sealant; Pecora Corp.
 - b. Tremco Acoustical Sealant; Tremco, Inc.
- B. Sound Attenuation Blankets: Unfaced mineral fiber blanket insulation produced by combining mineral fibers with thermosetting resins per ASTM C 665 in 4 inch thickness unless noted otherwise.
 1. Provide Type I without facing, typically.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and structural framing to which ceiling system attaches or abuts with installer present for compliance with requirements specified in this and other sections that affect installation and anchorage of ceiling system. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half width units at borders, and comply with reflected ceiling plans.

3.03 INSTALLATION

- A. General: Install acoustical ceiling systems to comply with installation standard referenced below, manufacturer's instructions and CISCA "Ceiling Systems Handbook".
 1. Standard for Installation of Ceiling Suspension Systems: ASTM C 636.
- B. Suspend ceiling hangers from building structural members and as follows:
 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying or other equally effective means.
 2. Where width of ducts and other construction within ceiling plenum interferes with the location of hangers at required spacing to support standard suspension system members,

- install supplemental suspension members and hangers in forms of trapezes or equivalent devices.
- a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
- 3. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eyescrews or other devices that are secure and appropriate for substrate, and in manner that will not cause deterioration or failure due to age, corrosion or elevated temperatures.
- 4. Do not support ceilings directly from permanent metal forms; furnish cast-in-place hanger inserts that extend through forms.
- 5. Do not attach hangers to steel roof deck or deck tabs. Attach hangers to structural members.
- 6. Space hangers not more than 4'-0" o.c. along each member supported directly from hangers, unless otherwise shown, and provide hangers not more than 8 inches from ends of each member.
- C. Install edge moldings of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical units.
 - 1. Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg before installing moldings.
 - 2. Screw-attach moldings to substrate at intervals not over 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to tolerance of 1/8 inch in 12'-0". Miter corners accurately and connect securely.
- D. Install suspension system runners square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- E. Install acoustical panels with undamaged edges and fitted accurately into suspension system runners and edge moldings.
- F. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at border and at penetrations.
 - 1. Where not possible to have full acoustical panel module, field cut edges to provide same appearance as factory reveal edge. Field apply matching paint to cut edges. Resulting appearance must be acceptable to Architect.
 - 2. Lay sound attenuation blankets where shown, extending over full area and butting joints tight. Do not cover light fixtures.

3.04 CLEANING AND PROTECTION

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings and suspension members. Comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 6513 - RESILIENT BASE AND ACCESSORIES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Rubber wall base.
- B. Rubber edge and reducer strips.

1.03 REFERENCES

- A. ASTM F 1861 - Standard Specification for Resilient Wall Base; 2008.
- B. BAAQMD 8-51 - Bay Area Air Quality Management District Regulation 8, Rule 51, Adhesive and Sealant Products; www.baaqmd.gov; current edition.
- C. FS RR-T-650 - Treads, Metallic and Nonmetallic, Skid Resistant; Federal Specifications and Standards; Revision E, 1994.
- D. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

1.04 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: Submit manufacturer's technical data for each type of resilient wall base and accessory product.
- C. Samples: Each type, color and pattern of resilient wall base and accessory required, showing full-range of color and pattern variations.
 - 1. 12 inch long samples of resilient flooring accessories.
- D. Maintenance Instructions: Submit copies of manufacturer's recommended maintenance practices for each type of resilient wall base and accessory required.

1.05 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain each type and color for product specified from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver products to project site in manufacturer's original, unopened cartons and containers, each bearing names of products and manufacturer, project identification, and shipping and handling instructions.
- B. Store products in dry spaces protected from the weather, with ambient temperatures maintained between 50 and 90 deg F.
- C. Move products into spaces where they will be installed minimum 48 hours prior to installation, unless longer period is recommended by manufacturer.

1.07 PROJECT CONDITIONS

- A. Install resilient wall base and accessories after other finishing operations, including painting, have been completed.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Maintain minimum temperature of 65 degF (18 degC) in spaces to receive resilient products for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. Subsequently, maintain minimum temperature of 55 degF (13 degC) in areas where work is completed.

1.09 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.
 - 1. Furnish quantities of the following products.
 - a. Base: 1 roll.
 - b. Stair Treads: 4
 - 2. Deliver extra materials to Owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements including ability to match color selections, provide products of the following:
 - 1. Rubber Wall Base
 - a. Armstrong World Industries, Inc.
 - b. BurkeMercer Flooring Products, Inc.
 - c. Johnsonite.
 - d. Roppe Corp.
 - e. Nora Systems, Inc
 - f. Flexco Copropration
 - 2. Rubber Edge and Reducer Strips
 - a. Afco Rubber Corp.
 - b. BurkeMercer Flooring Products, Inc.
 - c. Johnsonite.
 - d. Roppe Rubber Corp.
- B. Substitutions: See Section 01 2500 - Substitution Procedures.

2.02 RESILIENT BASE AND ACCESSORIES

- A. Rubber Wall Base: Provide rubber base per ASTM F 1861, Type TS or TP, Style A (straight) and/or Style B (coved), as follows:
 - 1. Height: 4 inches.
 - 2. Length: Minimum 100 foot rolls.
 - 3. Thickness: 1/8 inch gage.
 - 4. Outside Corners: Premolded or job formed.
 - 5. Inside Corners: Job formed.
 - 6. Color: As indicated on Room Finish Schedule.
- B. Rubber Edge and Reducer Strips: 1/8 inch thick, homogeneous rubber, profiles as scheduled.
 - 1. Color: As indicated on Room Finish Schedule.

2.03 INSTALLATION MATERIALS

- A. Adhesive (Cements): Water-resistant, stabilized type as recommended by flooring manufacturer to suit material and substrate conditions.
 - 1. Provide only products having lower volatile organic compound (VOC) content than required by the more stringent of GS-36 for Commercial Adhesive, South Coast Air Quality Management District Rule No.1168 and the Bay Area Air Quality Management District Regulation 8, Rule 51.
- B. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based formulation provided or approved by floor covering manufacturer for applications indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Require Installer to inspect substrates and areas where resilient products will be installed to verify they are satisfactory for installation and in compliance with manufacturer's requirements.

- B. Do not allow resilient wall base and accessory work to proceed until substrate surfaces are satisfactory.

3.02 PREPARATION

- A. Comply with resilient product manufacturer's written installation instructions for preparing substrates indicated to receive resilient products.
- B. Use leveling and patching compounds as recommended by resilient products manufacturer for filling small cracks, holes and depressions in substrates.
- C. Remove coatings from surfaces that would prevent adhesive bond, including curing compounds and substances incompatible with resilient product adhesives, paint, oils, waxes, and sealers using mechanical methods recommended by manufacturer. Do not use solvents.
- D. Broom clean or vacuum surfaces to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.03 INSTALLATION

- A. Install resilient products using method indicated per manufacturer's printed instructions.
- B. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required.
 - 1. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
 - 2. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical surfaces.
 - 3. Do not stretch base during installation.
 - 4. On masonry surfaces or other similar irregular vertical substrates, fill voids between metal top edge strip cove cap and vertical surface with manufacturer's recommended adhesive filler material.
 - 5. Form inside corners on job from straight pieces of maximum length possible, by cutting an inverted V-shaped notch in toe of base at point where corner is formed. Shave back of base where necessary to produce snug fit to substrate.
 - 6. Install premolded outside corners before installing straight pieces.
 - 7. Form outside corners on job, from straight pieces of maximum lengths possible, without whitening at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce snug fit without removing more than half the wall base thickness.
- C. Place resilient edge and reducer strips tightly butted to flooring and secure with adhesive.

3.04 CLEANING AND PROTECTION

- A. Perform following operations immediately upon completion of resilient flooring:
 - 1. Remove black marks and excessive soil.
 - 2. Remove any excess adhesive or other surface blemishes, using appropriate cleaner recommended by resilient base and accessory manufacturers.
- B. Protect resilient base and accessories against marks, marks, indentations, and other damage during construction period to comply with manufacturer's directions.
- C. Clean resilient base and accessories not more than 4 days prior to date scheduled for inspections intended to establish date of Substantial Completion in each area of project. Clean resilient base and accessories by method recommended by manufacturer.

END OF SECTION

SECTION 09 6813 - TILE CARPETING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Extent, location and details for carpet tile are shown on the drawings and in schedules.

1.03 REFERENCES

- A. ASTM D 2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials; 2006.
- B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2007.
- C. ASTM E 648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2010e1.
- D. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2005.
- E. ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2004.
- F. CRI 104 - Standard for Installation of Commercial Textile Floorcovering Materials; Carpet and Rug Institute; 2002.
- G. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; National Fire Protection Association; 2006.
- H. BAAQMD 8-51 - Bay Area Air Quality Management District Regulation 8, Rule 51, Adhesive and Sealant Products; www.baaqmd.gov; current edition.
- I. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

1.04 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product data for each type of carpet tile material and installation accessory required. Submit written data on physical characteristics, durability, resistance to fading, and flame resistance characteristics.
- C. Shop drawings showing layout and placement of cut tiles. Indicate pile or pattern direction, start points, and locations and types of edge strips. Indicate columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tile. Show installation details at special conditions.
- D. Samples of verification purposes in manufacturer's standard size, showing full range of colors, texture, and pattern variations expected. Prepare samples from same material to be used for the Work. Submit the following:
 - 1. Full-size carpet tile of each type required.
 - 2. 12-inch-long samples of each type exposed edge stripping and accessory item.
- E. Test Reports: Indicating vapor emission rate and diagram showing vapor emission test locations and results of relative humidity test.

1.05 QUALITY ASSURANCE

- A. Carpet Tile Surface Burning Characteristics: Provide carpet tile identical to that tested for the following fire performance characteristics, per test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify carpet tile with appropriate markings of applicable testing and inspecting organization.

1. Test Method: DOC FF 1-70.
 2. Rating: Pass.
- B. Single Source Responsibility: Provide material produced by a single manufacturer for each carpet tile type.
- C. Comply with standards, requirements and recommendations of CRI 104, Standard for Installation of Commercial Textile Floorcovering Materials and CRI's Specifier's Guide for Contract Carpet Installation published by the Carpet and Rug Institute.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver materials to project site in original factory wrappings and containers, labeled with identification of manufacturer, brand name, and lot number.
- B. Store materials in original undamaged packages and containers, inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity. Lay flat, blocked off ground. Maintain minimum temperature of 68 degF (20 degC) at least three days prior to and during installation in area where materials are stored.

1.07 PROJECT CONDITIONS

- A. General: Comply with CRI 104, Section 7: "Site Conditions".

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Submit a written warranty executed by Contractor, Installer and Manufacturer, agreeing to repair or replace carpet tile which fails in materials or workmanship within the specified warranty period. Failures include excessive surface wear, edge ravel, zippering, backing delamination, watermarking, change in physical properties or deterioration of materials and construction beyond normal wear.
1. Warranty period is five years after the date of Substantial Completion.

1.09 EXTRA MATERIALS

- A. Extra Materials: Furnished from same production run as each type of carpet tile installed. Package materials with protective covering and identify with labels describing contents. Deliver extra materials to Owner.
1. Carpet Tile: Furnish quantity of full-size units equal to 2 percent, or one box whichever is greater, of the amount of each type carpet tile installed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Carpet Tile: As indicated on the Room Finish Schedule.

2.02 ACCESSORIES

- A. Carpet Edge Guard: Extruded or molded heavy-duty vinyl or rubber of size and profile indicated; minimum 2-inch-wide anchorage flange; colors as selected by Architect from manufacturer's standard color range.
- B. Installation Adhesive: Water resistant and nonstaining as recommended by carpet manufacturer to comply with flammability requirements for installed carpet tile.
1. Provide only products having lower volatile organic compound (VOC) content than required by the more stringent of GS-36 for Commercial Adhesive, South Coast Air Quality Management District Rule No.1168 and the Bay Area Air Quality Management District Regulation 8, Rule 51.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Require Installer to inspect subfloor surfaces to verify substrates are satisfactory for installation of carpet tile flooring materials.

1. Satisfactory subfloor surface is defined as:
 - a. A surface smooth and free from cracks, ridges, holes, depressions, scale, coatings preventing adhesive bond, and other defects impairing performance or appearance per ASTM F 710.
 - b. A slab substrate dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond.
 - c. A slab substrate having a pH level not greater than 9 or less than 5.
2. Notify Construction Manager in writing of any major defects detrimental to proper installation.
- B. Perform moisture and alkalinity tests on concrete subfloors to determine if surfaces are sufficiently cured and dry per ASTM F 1869.
 1. Test Rate: Per CRI 104; 1 per every 1,000 sq. ft., but not less than 3 tests total for a given area.
 2. Satisfactory test results are as follows:
 - a. Moisture Emission Rate: Not greater than 3 lbs. per 1000 sq. ft. per 24 hours when tested using the calcium chloride moisture test kit.
 - b. Alkalinity: pH range of 7 to 9.
 3. Treat unsatisfactory surfaces as recommended by manufacturer.
- C. Perform relative humidity test on concrete subfloors to determine if percent of relative humidity per ASTM F 2170
 1. Test Rate: 1 per every 1,000 sq. ft., but not less than 3 tests total for a given area, taken at the center of the concrete slab.
 2. Satisfactory test results: Humidity must not exceed 75 percent.
- D. Determine adhesion and dryness characteristics by performing bond test recommended by flooring manufacturer.
- E. Do not allow carpet tile work to proceed until subfloor surfaces are satisfactory.

3.02 PREPARATION

- A. Comply with carpet tile manufacturer's recommendations to prepare substrate to receive carpet tile.
- B. Level subfloor within 1/4 inch in 10 feet, noncumulative, in all directions. Sand or grind protrusions, bumps, and ridges. Patch and repair rough areas. Fill depressions.
 1. Use leveling and patching compounds to fill cracks, holes, depressions in subfloor as recommended by manufacturer.
 2. When substrates require vapor emission floor treatment, apply leveling and patching compounds after floor treatment.
- C. Clear away debris and scrape up cementitious deposits, existing adhesive, and other detrimental materials, from concrete surfaces to receive carpet tile.
- D. Broom, vacuum, and otherwise clean subfloors to be covered with carpet tile in manner recommended by carpet tile manufacturer.
- E. Apply sealer to concrete floor slab substrate as recommended by manufacturer to prevent dusting. Sealer shall be compatible with "peel and stick" adhesive applied to carpet tile.

3.03 INSTALLATION

- A. Comply with manufacturer's recommendations for installation of carpet tile; maintain uniformity of carpet direction and lay of pile, unless otherwise indicated.
- B. Extend carpet tile under removable flanges and furnishings and into alcoves and closets of each space.
- C. Install carpet edge guard where edge of carpet tile is exposed; anchor guards to substrate.
- D. Install with pattern as indicated on Drawings.
- E. Dry-fit sections of carpet tile prior to application of releasable adhesive.

- F. Apply releasable adhesive uniformly to substrate per manufacturer's instructions. Butt edges tight to form seams without gaps.

3.04 CLEANING AND PROTECTION

- A. Remove adhesive from carpet tile surface with manufacturer's recommended cleaning agent.
- B. Remove and dispose of debris and unusable scraps. Vacuum using commercial machine having face-beater element. Remove soil. Replace carpet tiles where soil cannot be removed. Remove protruding face yarn.
- C. Vacuum carpet tile.
- D. Provide final protection and maintain conditions, in manner acceptable to manufacturer and installer, to ensure carpet tile is not damaged or deteriorated at time of Substantial Completion.

END OF SECTION

SECTION 09 9100 - PAINTING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Extent of painting work is shown on Drawings and Schedules and by provisions of this Section.
- B. Work includes surface preparation, painting and finishing of interior and exterior items and surfaces throughout project, except as otherwise indicated.
 - 1. Surface preparation, priming and finish coats of paint specified in this Section are in addition to shop-priming and surface treatment specified under other Sections.
- C. "Paint" includes coating systems materials, primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.
- D. Paint exposed surfaces whether or not colors or finishes are designated in "schedules", except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces.
 - 1. Painting includes field painting exposed bare and covered pipes and ducts, hangers, exposed steel and iron equipment, except as otherwise indicated. Do not paint pipe markers, color coded banding tape, pipe/duct tags, stenciled identification. Where piping and ductwork are to be painted to meet facilities color coding standard, paint surfaces according to color guidelines in Division 22 and 23, using paint systems and preparation designated in this Section.
 - 2. If color of finish is not designated, the Architect will select from colors or finishes specified.
- E. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts and labels.
 - 1. Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
 - 2. Concealed surfaces include wall surfaces behind lockers, wood paneling, and other applied panels.

1.03 REFERENCES

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D 16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2011.
- C. ASTM D 523 - Standard Test for Specular Gloss; 1989 (Reapproved 1999)
- D. ASTM D 4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 2007.
- E. NACE (IMP) - Industrial Maintenance Painting; NACE International; Edition date unknown.
- F. SSPC (PM1) - Steel Structures Painting Manual, Vol. 1, Good Painting Practice; Society for Protective Coatings; Fourth Edition.

1.04 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
- B. Sheen: As defined by the Master Painters Institute (MPI).
 - 1. Wherever reference is made to sheen finish or gloss, provide reflectivity, when measured with a gloss meter per ASTM D 523, as follows for each designation:

	Designation	60 degree units	85 degree units
Level 1	Flat	5 maximum	10 maximum
Level 2	Velvet	10 maximum	10 to 35
Level 3	Eggshell	10 to 25	10 to 35
Level 4	Satin	20 to 35	35 minimum
Level 5	Semi-gloss	35 to 70	N/A
Level 6	Gloss	70 to 85	N/A
Level 7	High Gloss	greater than 85	N/A

1.05 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: Submit product data for each paint system specified including block fillers and primers.
 - 1. Provide manufacturer's technical information including label analysis and instructions for handling, storage and application of each material proposed for use.
 - 2. List each material and cross-reference the specific coating, finish system and application. Identify each material by the manufacturer's catalog number and general classification.
 - 3. Provide certification by manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOC's).
- C. Samples for Initial Verification Purposes: Provide samples of each color, sheen and material to be applied, with texture to simulate actual conditions, on 12 inch by 12 inch card stock.
 - 1. Samples submitted must be dry.
 - 2. Resubmit until required color, sheen and texture is achieved.
 - 3. Do not order paint materials until Architect has reviewed and accepted samples for initial verification.

1.06 QUALITY ASSURANCE

- A. Single Source Responsibility: Provide primers and undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

1.07 FIELD SAMPLES

- A. Field Samples: On wall surfaces and other exterior and interior components, duplicate finishes of prepared samples.
 - 1. Provide full-coat finish samples on minimum 100 sq. ft. of surface until required sheen, color, and texture are obtained; simulate finished lighting conditions for review of in-place work.
 - 2. Final acceptance of colors will be from field samples.
 - 3. Architect will select one room or surface to represent surfaces and conditions for each type of coating and substrate to be painted.
 - a. Apply coatings in room or surface in accordance with schedule or as specified.
 - b. After finishes are accepted, room or surface will be used for evaluation of coating systems of a similar nature.

1.08 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver materials to job site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
 - 1. Product name or title of material.
 - 2. Product description (generic classification or binder type).
 - 3. Federal Specification number, if applicable.
 - 4. Manufacturer's stock number and date of manufacture.
 - 5. Contents by volume, for pigment and vehicle constituents.
 - 6. Thinning instructions.

7. Application instructions.
8. Color name and number.
- B. Store materials not in use in tightly covered containers in well ventilated area at minimum ambient temperature of 45 degF (7 degC). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
 1. Protect from freezing. Keep storage areas neat and orderly. Remove oily rags and water daily. Take necessary measures to ensure workers and work areas are protected from fire and health hazards resulting from handling, mixing and application.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Apply water-based paints only when temperature of surfaces to be painted and surrounding air temperature are between 50 degF (10 degC) and 90 degF (32 degC).
- B. Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperature are between 45 degF (7 degC) and 95 degF (35 degC).
- C. Do not apply paint in snow, rain, fog or mist, when relative humidity exceeds 85 percent, at temperatures less than 5 degF (3 degC) above the dew point, or to damp or wet surfaces.
 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.
- D. Do not apply paint where conditions of airborne debris or contamination exist or could exist.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements including color selection, provide products of one of the following:
 1. Benjamin Moore and Co.(Moore)
 2. PPG Industries, Pittsburgh Paints(PPG)
 3. The Sherwin-Williams Co.(SW)
- B. Substitutions: See Section 01 2500 - Substitution Procedures.

2.02 MATERIALS

- A. Material Compatibility: Provide block fillers, primers, finish coat materials and related materials compatible with one another and the substrates indicated under conditions of service and application as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.
- C. Color Pigments: Pure, non-fading, applicable types to suit substrates and service indicated.
- D. Colors: Acceptability of any manufacturer is contingent upon availability of colors, sheens and textures matching those indicated on Room Finish Schedule as acceptable to Architect.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions under which painting will be performed for compliance with paint application requirements. Surfaces receiving paint must be thoroughly dry before paint is applied.
 1. Do not begin to apply paint until unsatisfactory conditions have been corrected.
 2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify Architect about anticipated problems using materials specified over substrates primed by others.

3.02 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures and similar items already installed that are not to be painted. Where removal is not practical, provide surface-applied protection prior to surface preparation and painting.
 1. Do not remove Underwriter's Laboratories, Factory Mutual or other code-required labels or equipment names, identification, performance rating or nomenclature plates.
 2. Protect adjacent surfaces with suitable covering or other method during work progress. Mask, or protect with suitable coverings, sealing and glazing compound, glass, gauges, moving parts of machinery and other mechanical equipment such as valve stems, sprinkler heads and similar items.
 3. After completion of painting operations, reinstall items removed using workers skilled in trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean new and previously painted (existing) substrates of substances that could impair the bond of the various coatings. Remove oil and grease prior to cleaning.
 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted in conformance with manufacturer's instructions for each particular substrate condition and specified.
 1. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing about anticipated problems using specified finish-coat material with substrates primed by others.
 2. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods in compliance with the Society for Protective Coatings recommendations.
 - a. Clean steel surfaces as recommended by paint system manufacturer and the requirements of SSPC-SP6.
 - b. Touch up bare areas and damaged shop-applied prime coats. Wire brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as shop coat.
- D. Materials Preparation: Carefully mix and prepare paint materials per manufacturer's directions.
 1. Maintain containers used in mixing and applying paint in clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density; stir as required during application.
 - a. Do not stir surface film into material. Remove film and, if necessary, strain material before using.
 3. Use only thinners approved by painting manufacturer and only within recommended limits.
- E. Tinting: Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint undercoats to match color of finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.03 APPLICATION

- A. Apply paint per manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.
- B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces or conditions detrimental to formulation of a durable paint film.
 1. Paint colors, surface treatments and finishes as indicated in schedules.
 2. Provide finish coats compatible with primers used.

3. The number of coats and film thickness required is the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by the manufacturer.
 - a. Sand between applications where sanding is required to produce an even smooth surface per manufacturer's directions.
 - b. Give special attention to ensure surfaces, including edges, corners, crevices, welds and exposed fasteners receive a dry film thickness equivalent to flat surfaces.
4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned tube radiation, grilles and similar components are in place. Extend coatings in these areas as required to maintain system integrity and provide desired protection.
5. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
6. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, nonspecular black paint.
7. Paint backside of access panels and removable or hinged covers to match exposed surfaces.
8. Finish exterior doors on tops, bottoms and side edges same as exterior faces.
9. Sand lightly between each succeeding coat.
- C. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
 1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer.
 - a. Sand between applications where sanding is required to produce an even smooth surface per manufacturer's directions.
 2. Omit primer on metal surfaces that have been shop primed and touch up painted.
 - a. At existing surfaces, apply finish coat only.
 3. Apply additional coats if undercoats, stains, and other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance.
 - a. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky or moderate thumb pressure and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- D. Application Procedures: Apply paints and coating by brush, roller, spray or other applicators per manufacturer's directions.
- E. Minimum Coating Thickness: Apply materials no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of entire system as recommended by manufacturer.
- F. Mechanical and Electrical Work: Painting mechanical and electrical work is limited to items without factory finish exposed in occupied spaces.
- G. Prime Coats: Before applying finish coats, apply a prime coat of material as recommended by manufacturer to material required to be painted or finished and not prime coated by others.
 1. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to assure a finish coat with no burn through or other defects due to insufficient sealing.
- H. Pigmented (Opaque) Finishes: Completely cover to provide a smooth opaque surface of uniform finish, color, appearance and coverage.

1. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.
- I. Completed Work: Match approved samples for color, sheen texture and coverage. Remove, refinish or repaint work not complying with specified requirements.

3.04 CLEANING AND PROTECTION

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish and other discarded paint materials from the site.
 1. After completion of painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.
- B. Protect work of other trades, whether to be painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting as acceptable to Architect.
- C. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
 1. At completion of construction activities of other trades, touchup and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.05 INTERIOR PAINT SCHEDULE

- A. General: Provide the following paint systems for the various substrates indicated.
- B. Gypsum Wall Board:
 1. Lo-Lustre Acrylic-Enamel Finish: 2 finish coats over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate recommended by manufacturer to achieve a total dry film thickness not less than 1.2 mils (0.031 mm.).
 - 1) Moore: Not Required
 - 2) PPG: Speedhide Primer 6-2
 - 3) SW: ProMar 200 0 VOC Primer B28W2600 (2 g/L)
 - b. First and Second Coats: Low-luster eggshell, acrylic-latex, interior enamel applied at spreading rate recommended by manufacturer to achieve a total dry film thickness not less than 9.2 mils.
 - 1) Moore: Aura Eggshell Waterborne 524 (47g/L) provide Color Foundation 521 (less than 49 g/L) where required to obtain Architect's selected color
 - 2) PPG: Manor Hall Eggshell Acrylic Latex 89-6 Series
 - 3) SW: Duration Home Satin Latex A97-1200 Series
- C. High Gloss Markerboard Paint: Provide the following paint finish system over substrates indicated on Drawings. Take care to prepare substrate as instructed by finish coat manufacturer to provide appropriate conditions for the successful application of finish coating. This will include sanding of substrate and sanding of primer coats after they dry:
 1. Markerboard paint: 1 finish coat over multiple coats of primer.
 - a. Finish Coat: Ideapaint; Create as distributed by MDC
 - 1) Color: Clear
- D. Ferrous Metal:
 1. Low-Lustre Acrylic Enamel Finish: Two finish coats over a prime coat.
 - a. Prime Coat: Quick-drying, rust inhibitive, acrylic latex based primer, as recommended by manufacturer, applied at spreading rate to achieve a total dry film thickness not less than 2 mils.
 - 1) Moore: Super Spec HP Acrylic Metal Primer P04 (54 g/L)
 - 2) PPG:90-712 Series Pitt-Tech Int/Ext Primer/Finish DTM Industrial Enamel. (123 g/L)
 - 3) S-W: ProCryl Universal Primer B66-310 Series (less than 100 g/L).
 - b. First and Second Coats: Low odor, low lustre, acrylic latex interior enamel applied at spreading recommended by manufacturer to achieve a total dry film thickness not less than 3.2 mils.

- 1) Moore: Aura Eggshell Waterborne 524 (47g/L) provide Color Foundation 521 (less than 49 g/L) where required to obtain Architect's selected color
- 2) PPG: Manor Hall Eggshell Acrylic Latex 89-6 Series
- 3) SW: Pro Industrial 0 VOC Acrylic Eg-Shel B66-660 Series

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 10 1443 - INTERIOR SIGNAGE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Interior Signage
 - 1. Vinyl wall graphic

1.03 REFERENCES

- A. 36 CFR 1191 - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities; Final Rule; current edition; (ADA Standards for Accessible Design).
- B. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2006.
- C. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2006.

1.04 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: Provide manufacturer's construction details relative to materials, dimensions of individual components, profiles and finishes for each type of sign required.
- C. Samples: Submit finish samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements.

PART 2 PRODUCTS

2.01 PRODUCT

- A. Fat Head, LLC; Custom Fathead Mural

2.02 MATERIALS

- A. Vinyl Film: Provide opaque nonreflective vinyl film, 0.0035-inch minimum thickness, with self-adhesive reusable backing.

2.03 NON-TEXT GRAPHICS

- A. Architect will make available to the successful Signage Fabricator/Contractor an electronic file of all non-text graphics required for signage.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

- A. Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
- B. Do not apply to freshly painted walls. Wait a minimum of 30 days after painting before applying graphic.

3.02 CLEANING AND PROTECTION

- A. At completion of the installation, clean soiled sign surfaces per manufacturer's instructions. Protect units from damage until acceptance by the Owner. Replace all damaged defective signs with new units.

END OF SECTION

SECTION 10 2226 - OPERABLE PARTITIONS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Types of operable panel partitions required include the following:
 - 1. Manually operated single panel units, acoustically rated.

1.03 RELATED SECTIONS

- A. Section 09 21 16 - Gypsum Board Assemblies for Acoustical bulkhead construction.

1.04 REFERENCES

- A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2007.
- B. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2004.
- C. ASTM E 413 - Classification for Rating Sound Insulation; 2004.
- D. ASTM E 557 - Standard Practice for Architectural Application and Installation of Operable Partitions; 2000 (R2006).
- E. ASTM E 596 - Standard Test Method for Laboratory Measurement of Noise Reduction of Sound-Isolating Enclosures; 1996 (R2002).
- F. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.05 PERFORMANCE REQUIREMENTS

- A. Acoustical Performance: Provide operable panel partitions tested by a qualified independent testing agency for the following acoustic properties according to following test method.
 - 1. Sound Transmission Requirements: Operable panel partition assembly tested in a full-scale opening (14 feet by 9 feet) for laboratory sound transmission loss performance per ASTM E 90, determined by ASTM E 413 and rated for the following Sound Transmission Class (STC) plus or minus 1.
 - a. Sound Transmission Class (STC) 53.

1.06 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples for submittal procedures.
- B. Product Data: Provide product data on physical characteristics, durability and surface burning characteristics for each type of operable panel partition and accessory specified.
- C. Shop Drawings: Indicate location and extent of operable panel partitions. Include plans, elevations, large-scale details of anchorages and accessory items.
 - 1. Indicate unit conditions at openings, typical and special details.
 - 2. Indicate location and installation requirements for hardware.
 - 3. Indicate direction of travel.
 - 4. Indicate static and dynamic loading on the building structure.
- D. Samples: Submit samples of each type of material exposed to view. Include full width sample not less than 36 inches wide of facing material selected in set for color, texture and pattern specified, illustrating full range of variation expected.
- E. Acoustical Certification: Submit independent testing agency's certification stating product and materials furnished comply with specified requirements. Include certified laboratory testing data indicating materials and assembly comply with specified requirements.

- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.07 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in installing operable partitions who is certified in writing by operable panel partition manufacturer as qualified to install this manufacturer's partition systems.
- B. Single Source Responsibility: Obtain operable panel partitions and mounting hardware from one source from a single manufacturer.
- C. Surface Burning Characteristics: Provide panel finish face with the following surface burning characteristics as determined by testing identical products per ASTM E 84 by UL or other testing and inspecting agencies acceptable to authorities having jurisdiction.
 - 1. Flame Spread: 25 or less.
 - 2. Smoke Developed: 450 or less.
- D. Coordinate the installation of operable partition with supporting structure and gypsum board acoustical bulkhead installation/construction to provide a complete acoustical assembly meeting the STC of the specified operable panel partition.

1.08 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver materials to project site in original factory wrappings and containers, clearly labeled with identification of manufacturer, brand name, quality or grade, fire performance characteristics and lot number.
- B. Store panels only on edge, blocked off ground to prevent sagging and warping in original undamaged packages and containers, inside well ventilated area protected from weather, moisture, soiling, extreme temperatures and humidity.
- C. Comply with manufacturer's instructions and recommendations for special delivery, storage and handling requirements.

1.09 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Submit written warranty executed by Contractor, Installer and Manufacturer, agreeing to repair or replace defective materials and workmanship during the warranty period.
 - 1. Defective materials and workmanship are hereby defined to include evidence of abnormal deterioration, failure of operational parts to function normally, structural failure of components resulting from normal use, deterioration or discoloration of finishes in excess of normal aging, and failure of the work to fulfill specified performance requirements.
 - 2. The warranty period is the two (2) year period after the date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
 - 1. Hufcor Inc.
 - 2. Modernfold, Inc.
- B. Design Standard: Hufcor Inc.; Model 631

2.02 CONFIGURATION, OPERATION AND DESIGN

- A. Operable Partition Configuration/Operation: Provide manually operated, top supported single panels with remote stacking.

2.03 PANEL CONSTRUCTION

- A. General: Metal framed, top supported, single panels as follows:
 - 1. Nominal Panel Thickness: 3 inches nominal.
 - 2. Panel Weight: Not greater than 10.5 lbs/sf

3. Face Finish: Porcelain enameled steel markerboard

B. Hardware: Manufacturer's standard, finished to match exposed hardware on partition system.

2.04 SUSPENSION SYSTEMS

A. Carriers: Steel trolley system using case hardened steel wheels with ball bearings for each trolley as required for size and weight of partition for ease of operation.

1. Provide four wheel trolleys.

B. Suspension Tracks: Heavy-duty steel or aluminum with adjustable steel hanger rod overhead supports specifically designed for use with size and type operable panel partition assembly indicated. Provide track so that deflection independent of structural support system is not more than 1/360th of opening width. Exposed portions of track shall have finish selected by Architect.

2.05 SEALS

A. Vertical Seals: tongue and groove configuration.

B. Horizontal Top Seals: Continuous contact extruded vinyl or mechanical retractable vinyl faced seal exerting consistent pressure on track when extended.

C. Horizontal Bottom Seals: Retractable seal exerting positive pressure downward ensuring horizontal and vertical sealing and resisting panel movement.

1. Extension/retraction of bottom seal automatically actuated by movement of partition.
Provide not less than 2 inch clearance between retracted seal and floor finish.

D. Final Closure: Positive lever activated mechanical closure expanding from panel edge to create a positive acoustical seal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine flooring, structural support and opening for compliance with requirements for installation tolerances and other conditions affecting performance of operable panel partitions.

B. Do not proceed with installation until satisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install operable panel partitions and accessories per ASTM E 557 after other finishing operations including painting, have been completed.

B. Install operable panel partitions as indicated and in compliance with manufacturer's written installation instructions.

C. Match operable panel partitions for color and pattern by installing partitions from cartons in same sequence as manufactured and packaged, if so numbered.

D. Repair or replace damaged operable panel partition components as acceptable to Architect. Broken, cracked, chipped or deformed panels will not be acceptable.

3.03 ADJUSTING

A. Lubricate bearings and sliding parts and adjust to ensure smooth easy operation.

3.04 CLEANING AND PROTECTION

A. Clean exposed operable panel partition surfaces exposed to view as recommended by manufacturer.

B. Protect partitions from damage during construction period. Ensure partitions will be without damage or deterioration at time of final acceptance.

END OF SECTION

SECTION 10 4413 - FIRE EXTINGUISHER CABINETS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Fire extinguisher cabinets.

1.03 REFERENCES

1.04 PERFORMANCE REQUIREMENTS

- A. Conform to NFPA 10.

1.05 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: Provide manufacturer's technical data and installation instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire Extinguisher Cabinets and Accessories:
 - 1. JL Industries, Inc.
 - 2. Larsen's Manufacturing Co.
 - 3. Potter-Roemer.
 - 4. Williams Brothers Corp.
- B. Design Standard: Larsen's 2409-R4
- C. Substitutions: See Section 01 2500 - Substitution Procedures.

2.02 FIRE EXTINGUISHER CABINETS

- A. Provide fire extinguisher cabinets where indicated, of suitable size for housing fire extinguishers of type and capacity indicated.
- B. Metal: Formed primed steel sheet; 0.036 inch thick base metal.
- C. Cabinet Type: Semi-recessed type.
 - 1. Trim: Returned to wall surface, with 3-1/2 inch projection.
 - 2. Form cabinet enclosure with right angle inside corners and seams. Form perimeter trim and door stiles.
- D. Cabinet Construction: Manufacturer's standard enameled steel box, with frame, door and hardware to suit cabinet type and door style indicated. Weld all joints and grind smooth. Miter and weld perimeter door frames.
- E. Door Material and Construction: Type 304 stainless steel, hollow steel door construction with tubular stiles and rails.
 - 1. Door Style: Solid flush panel.
 - 2. Door Hardware: Door pull and friction latch. Provide concealed or continuous type hinge permitting door to open 180 degrees.
- F. Finish of Cabinet Exterior Trim and Door: No. 4.
- G. Finish of Cabinet Interior: White enamel.

2.03 FABRICATION

- A. Names or labels are not permitted on exposed faces of fire extinguisher cabinets. Provide identification on either the inside face of the door or on the back of the cabinet concealed by the wall indicating manufacturer's name and product model number.

2.04 FACTORY FINISH OF FIRE EXTINGUISHER CABINETS

- A. General: Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations except as otherwise indicated. Apply finishes in factory after products are assembled. Protect cabinet finishes with strippable plastic or paper covering, prior to shipment.
- B. Painted Finish:
 - 1. Preparation: Clean surfaces of dirt, grease, and loose rust or mill scale. Apply finish to all surfaces of fabricated and assembled units, whether exposed or concealed when installed, except those surfaces specified to receive and other finish.
 - 2. Baked Enamel Finish: Immediately after cleaning and pretreatment, apply manufacturer's standard white baked enamel coating in interior.
- C. Stainless Steel Finishes
 - 1. Finish designations prefixed by AISI conform with the American Iron and Steel Institute for designating finishes for stainless steel.
 - 2. Remove or blend tool and die marks and stretch lines into finish.
 - 3. Grind and polish surfaces to produce uniform, directional, textured, and polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.
 - 4. Satin, Directional Finish: AISI No. 4 finish.

2.05 IDENTIFICATION

- A. Identify fire extinguisher in cabinet with lettering spelling "FIRE EXTINGUISHER", painted on door by silkscreen process. Provide lettering on door, as selected by Architect from manufacturer's standard letter sizes, styles, colors and layouts.
 - 1. Color: Black.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install items included in this Section at locations and at mounting heights indicated, or if not indicated, at heights to comply with applicable regulations of governing authorities.
 - 1. Prepare recess in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim to comply with manufacturer's instructions.
 - 2. Securely fasten fire extinguisher cabinets to structure, square and plumb, to comply with manufacturer's instructions.

END OF SECTION

SECTION 10 4416 - FIRE EXTINGUISHERS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Fire extinguishers.

1.03 RELATED SECTIONS

- A. Section 10 44 13 - Fire Extinguisher Cabinets.

1.04 REFERENCES

- A. NFPA 10 - Standard for Portable Fire Extinguishers; National Fire Protection Association; 2007.

1.05 PERFORMANCE REQUIREMENTS

- A. Conform to NFPA 10.
- B. Provide extinguishers classified and labeled by Underwriters Laboratories Inc. for type, rating, and classification of extinguisher indicated.

1.06 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: Provide manufacturer's technical data and installation instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire Extinguishers and Accessories:
 - 1. JL Industries, Inc.
 - 2. Larsen's Manufacturing Co.
 - 3. Potter-Roemer.
 - 4. Williams Brothers Corp.
- B. Design Standard: Larsen's Manufacturing Co. "MP10"
- C. Substitutions: See Section 01 2500 - Substitution Procedures.

2.02 FIRE EXTINGUISHERS

- A. General: Provide fire extinguishers of type indicated.
 - 1. Fill and service extinguishers to comply with requirements of governing authorities and manufacturer's requirements.
 - 2. Abbreviations indicated below identify extinguisher types related to UL classification system and not necessarily to type and amount of extinguishing material contained in extinguisher.
- B. Multi-Purpose Dry Chemical Type:
 - 1. General Use: UL rated 4-A; 80-B:C, 10 lb. nominal capacity, in enamel steel container, for Class A, Class B, and Class C fires.

2.03 EXTINGUISHER MOUNTING BRACKETS

- A. Provide manufacturer's standard bracket designed to prevent accidental dislodgement of extinguisher, of proper size for type and capacity of extinguisher indicated, in manufacturer's standard plated finish.
 - 1. Provide brackets for extinguishers not located in cabinets.

2.04 IDENTIFICATION

- A. Identify bracket-mounted extinguishers with red letter decals spelling "FIRE EXTINGUISHER", applied to wall surface. Letter size, style and location as selected by Architect.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install items included in this Section at locations and at mounting heights indicated, or if not indicated, at heights to comply with applicable regulations of governing authorities.

END OF SECTION

SECTION 11 3100 - RESIDENTIAL APPLIANCES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Refrigerator.
- B. Microwave oven.
- C. Dishwasher.
- D. Coffee Brewing System

1.03 REFERENCES

- A. UL (EAUED) - Electrical Appliance and Utilization Equipment Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples for submittal procedures.
- B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.
- C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Electric Appliances: Listed and labeled by UL and complying with NEMA standards.
- B. Certification Labels: Provide appliances which comply with standards and bears certification labels as follows:
 - 1. Energy Ratings: Provide energy guide labels with energy cost analysis (annual operating costs) and efficiency information as required by Federal Trade Commission.
 - 2. UL and NEMA Standards: Provide appliances with components that are listed and labeled by UL and comply with applicable NEMA Standards.
- C. ASSE Compliance: Provide dishwashers in compliance with ASSE Standard 1006 (Backflow prevention device on supply line).

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver residential equipment to Project site in manufacturer's undamaged protective packaging.
- B. Delay delivery of residential equipment until utility rough-in is complete and construction in spaces to receive equipment is substantially complete and ready for installation of such equipment.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide manufacturer's standard written warranty for each appliance.

PART 2 PRODUCTS

2.01 COMPONENTS

- A. Refrigerator:
 - 1. French Door Type: Freestanding, two-door unit with bottom drawer freezer, with separate temperature controls, equipped with automatic icemaker.
 - a. Freezer Capacity: 6.9 cubic feet
 - b. Fresh Food Capacity: 15.70 cubic feet

- c. Total Capacity: 22.6 cubic feet.
 - d. Color: Stainless Steel.
 - e. Manufacturer/Product: Electrolux; Model EI23BC36IS.
- B. Microwave:
 - 1. Built in stainless steel microwave
 - a. Capacity: 2.0 cubic feet.
 - b. Color: Sainless steel
 - c. Power: 900 watts.
 - d. Manufacturer/Products: Electrolux; Model EI24MO45IB with Trim Kit #EI27MO45TS
- C. Dishwasher:
 - 1. Under counter type built-in dishwasher with full extension upper and lower racks and removable silverware basket; 6 wash cycles, 7 temperatures up to 160 degF, Adjustable height upper rack.
 - a. Color: Custom plastic laminate faced panel. Refer to Room Finish Schedule. Coordinate with Millwork provided in Section 06 4023 - Interior Architectural Woodwork.
 - b. Manufacturer/Product: ASKO Appliances; Model D5233ADAFI
- D. Coffee Brewing System
 - 1. Dual brewing system coffe maker capable of independent brewing on each head.
 - a. Brewing Heads: 2
 - b. Finished Brewing Capacity: 74 ounces per side
 - c. Water inlet: 1/4 inch
 - d. Provide 2 thermo airpots. Color as selected by Architect.
 - e. Manufacturer: Wilbur Curtis Company, Inc.; Model D1000GT with ThermoPro TLXA 2.2 liter Airpots.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations.
- B. Built-in Equipment: Securely anchor units to supporting cabinetry or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and rough openings are completely concealed.
- C. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate for proper operation of appliances.
- D. Utilities: Refer to Division 22 and 26 for plumbing and electrical requirements.

3.02 STARTING EQUIPMENT

- A. Adjust for proper operation within manufacturer's published tolerances.
- B. Demonstrate proper operation of equipment to Owner's designated representative.

3.03 CLEANING

- A. Cleaning: Remove packing material from appliances and leave units in clean condition, ready for operation.

END OF SECTION

SECTION 12 2413 - ROLLER WINDOW SHADES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Manually operated window shades as indicated on Drawings.

1.03 REFERENCES

- A. NFPA 70 - National Electrical Code; National Fire Protection Association; 2005.

1.04 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: For each type of window shade specified. Include printed data on physical characteristics.
- C. Shop Drawings: Prepared specifically for this project; show dimensions and interface with other products and adjacent work.
 - 1. Include elevations indicating window shade units.
 - 2. Room schedule, using same room designations indicated on Drawings. Include field-verified dimensions of each opening to receive window shade systems.
 - 3. Indicate operator, fabric selection, and mounting type.
 - 4. Indicate control type and location.
 - 5. Wiring diagrams.
- D. Samples: Submit the following items, in manufacturer's standard sizes, showing full range of color, texture, and pattern variations expected. Prepare samples from the same material to be used for the Work.
 - 1. Shade Material: 12-inch-square unit, from dye lot used for the Work, with specified treatments applied. Show complete pattern repeat. Mark top and face of material.

1.05 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide window shade units identical to those tested for the following fire-test-response characteristics as determined by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Test Method: NFPA 701.
 - 2. Rating: Pass.
- B. Single-Source Responsibility: Obtain each type of motorized window shade from one source and by a single manufacturer.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver window shade units in manufacturer's cartons, clearly labeled with identification of manufacturer, brand name, and installed location. Store inside, in well ventilated area protected from weather, blocked off ground to prevent sagging, twisting or warping.
- B. Comply with instructions and recommendations of manufacturer for special delivery, storage, and handling requirements.

1.07 WARRANTY

- A. Shadecloth: Manufacturer's standard ten (10) year warranty.

1.08 PROJECT CONDITIONS

- A. Field Measurements: Check actual window shades dimensions by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Space Enclosure and Environmental Limitations: Do not install window shades until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manual Window Shades:
 - 1. Creative Windows; Open Light Roller Shades
 - 2. Draper, Inc.
 - 3. Lutron Electronics Co.
 - 4. MechoShade Systems, Inc.
- B. Design Standard:
 - 1. Manually Operated: Creative Windows; Openlight Roller Shade.
- C. Substitutions: See Section 01 2500 - Substitution Procedures.

2.02 MANUAL SHADES

- A. Window Shade System: Manually operated, spring assisted, vertical roll-up, fabric, window shade, mounting brackets, fascia, housings and other components necessary for a complete installation.
 - 1. Mounting: Recess mounted in ceiling pocket. Refer to Drawings.
 - 2. Configuration: Single solar shade.
 - 3. Interior Brackets: 0.07 inch ASTM A1008/1010 cold rolled steel
 - 4. Exterior Brackets: 0.07 inch ASTM A666 stainless steel
 - 5. Springs: ASTM A228 Stress Relieved High Carbon Steel
 - 6. Spring Assist Shades: Sprung clutch, when pre-rotated to the designated tension, reduces the pull force necessary to raise and lower heavy shades.
 - a. Tube Size / Maximum Weight: 2 inch / 30 Lbs
 - b. Pull Force: Nominal 6 Lbs
 - c. Control Device: Metal bead chain
 - 1) Stainless steel
 - 7. Brackets: Zinc plated stamped steel with suitable for ceiling, wall or jamb mounting. Provide size compatible with roller.
 - 8. Shade Bottom Slat: Extruded aluminum bar encased in heat-seamed hem.
- B. Roller: Fabricated from 6063T5 extruded aluminum or steel tube with diameter, wall thickness, and material selected by manufacturer to accommodate shade size.
 - 1. Provide with roller idler assembly of molded nylon and zinc-plated steel pin.
 - 2. Sliding pin to allow easy installation and removal of roller.
 - 3. Fabric connected to roller tube with LSE double-sided tape specifically developed to attach coated textiles to metal.
 - a. Tape attachment to minimize fabric laddering.

2.03 SHADE BANDS

- A. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.
 - 1. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.
 - 2. Shade band and Shade Roller Attachment:

- a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inch in diameter for manual shades are not acceptable.
- b. Provide for positive mechanical engagement with drive / brake mechanism.
- c. Provide for positive mechanical attachment of shade band to roller tube
- d. Shade band shall be made removable / replaceable with a "snap-on" snap-off" spline mounting, without having to remove shade roller from shade brackets.

2.04 SHADECLOTH

- A. Shadecloth: Woven vinyl fabric, dimensionally stable, UV resistant, flame retardant, and resistant to bacteria and fungal organisms.
 1. Fabric: Match Architect's Sample

2.05 HARDWARE AND ACCESSORIES

- A. Shade Roller: Extruded aluminum tube, 6063-ST6 alloy, with internal keyway to receive tubular motor.
- B. Mounting Spline: Extruded vinyl with asymmetrical locking channels. Spline to have sufficient capacity to hold shade and any additional weight without disengaging from tube.
- C. End Brackets: Sheet steel as standard with the manufacturer.
- D. Fascia: Extruded aluminum as standard with the manufacturer, with color coated finish as selected by the Architect.
- E. Fascia:
 1. Continuous removable extruded aluminum fascia that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
 2. Fascia shall be able to be installed across two (2) or more shade bands in one piece.
 3. Fascia shall fully conceal brackets, shade roller and fabric on the tube.
 4. Provide bracket / fascia end caps where mounting conditions expose outside of roller shade brackets.
 5. Notching of Fascia for manual chain shall not be acceptable.
- F. Blackout Side and Bottom Channels: Extruded aluminum channels as standard with manufacturer to reduce light infiltration around side of shades. Provide channels with light seals on both sides.
- G. Fasteners, support brackets, weights, and all other components required for a complete system.

2.06 ROLLER SHADE FABRICATION

- A. Fabricate units to fill existing openings in their entirety, from top to bottom and from side to side, with proper deductions to protect walls and sills from abrasion and to protect shade cloth from abrasion, unless specifically indicated otherwise.
- B. Fabricate shadecloth to hang flat without buckling, distortion, waves, cupping, or warps. Shade edges shall not fray, curl or unravel. Fabricate hem as follows:
 1. Standard Bottom Bar: Concealed heat seamed fabric, rolled over an aluminum bar.
- C. When seams are required, locate as per instructions and acceptance of Architect to be properly located for shade where seam is required.
- D. Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands.
 1. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed the lesser of either 192 inches (16 feet) or the manufacturer's standards.
 - a. Battens shall be roll-formed stainless steel or tempered steel, as required.
- E. For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment as acceptable to Architect.
 1. Seams shall be properly located.

- a. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer's standards.

2.07 FACTORY FINISHING

- A. Finish: Baked enamel color coating as standard with the manufacturer.
 1. Color: As selected by Architect from manufacturers full color range.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of window shades. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates, structural support, utility connections, tolerances, levelness, plumbness, humidity, moisture content level, cleanliness and other conditions are as required by the manufacturer, and ready to receive Work.
- C. Verify each roller shade assembly will fit within its corresponding window shade pocket.
- D. Test substrate as required to verify proper conditions.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Coordinate requirements for blocking, construction of shade pockets, and structural supports to ensure adequate means for installation of window shades.
- B. Coordinate installation of recessed shade pockets with ceiling construction.
- C. Where applicable coordinate interface and installation of window shades with provisions of HVAC system, lighting system, motorized projection screens, motorized projector lift, or video projector.
- D. Prior to installation, verify type and location of power supply. Coordinate requirements for power supply, conduit, and wiring required for window shade motors and controls.
- E. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions. Clean surfaces thoroughly prior to installation.

3.03 INSTALLATION

- A. Install window shade units level and plumb. Do not remove warning labels describing hazards of window shade system.
- B. Shade Pockets: Install shade pockets prior to or in conjunction with installation of suspended ceiling system. Attach to supporting structure with screws through top of pocket at 24 inch minimum centers.
 1. Install securely, plumb, level, and in alignment with pockets.
 2. After interior construction is complete, install shade and operating mechanism in pocket.
- C. Install closure panels to conceal roller and operating mechanism. Do not use exposed fasteners.
- D. Adjust location, level, and balance of window treatments to operate properly, smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
- E. Install safety devices and tags as called for in ANSI/WCMA A100.1.

3.04 ADJUSTING

- A. Remove, Repair and Reinstall or Restore in Place damaged items.
 1. Finish touch-up damaged surface finishes.
- B. Replace damaged materials or items with New if repair not acceptable to Architect.

- C. Adjust components and accessories for proper operation.

3.05 CLEANING AND PROTECTION

- A. Clean window shade surfaces, according to manufacturer's instructions, after installation.
- B. Remove surplus materials, packaging, rubbish, and debris resulting from installation. Leave installation areas neat, clean, and ready for use.
- C. Provide final protection and maintain conditions in manner acceptable to manufacturer and Installer to ensure motorized window shades are without damage or deterioration at time of Substantial Completion.
- D. Perform Demonstration and Training with Owner's designated staff.
 - 1. Demonstrate shade operation, proper adjustment, usage, cleaning and maintenance procedures.

END OF SECTION

State of Michigan
.gov
719 Griswold St

2012108

Bids and Permit
February 7, 2013

SECTION 12 3640 - STONE COUNTERTOPS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

1.02 SECTION INCLUDES

- A. Stone countertops with back and end splashes.

1.03 REFERENCES

- A. ANSI A108 Series/A118 Series/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2005.
- B. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
- C. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.
- D. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2003.
- E. ASTM C 615 - Standard Specification for Granite Dimension Stone; 2003.
- F. MIA (DSDM) - Dimension Stone Design Manual VI; Marble Institute of America, Inc.; 2003.
- G. NBGQA (SPEC) - Specifications for Architectural Granite; National Building Granite Quarries Association, Inc.; 2000.

1.04 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Product Data: For each variety of stone, stone accessory, and other manufactured products specified.
 - 1. For stone varieties proposed for use on Project, include data on physical properties required by referenced ASTM standards.
- C. Shop Drawings: Show details of fabrication and installation of stone countertops, including dimensions and profiles; arrangement and details of jointing, supporting, and bonding stone countertops; and details showing relationship with, attachment to, and reception of related work.
- D. Stone Samples for Verification: Sets for each color, grade, finish, and variety of stone required; not less than 12 inches square. Include 2 or more samples in each set showing the full range of variations in appearance characteristics expected in completed Work.
- E. Qualification Data: For firms and persons specified in the "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.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed stone countertops similar in material, design, and extent to this Project that has resulted in construction with a record of successful in-service performance.
- B. Fabricator Qualifications: Engage a firm experienced in producing stone countertops similar to this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units without delaying the Work.
- C. Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from a single quarry with resources to provide materials of consistent quality in appearance and physical properties and to cut and finish material without delaying the Work.

1. Obtain each variety of stone from a single quarry, whether specified in this Section or in another Section of the Specifications.
- D. Source Limitations for Other Materials: Obtain each type of grout, stone accessory, sealant, and other material from a single manufacturer for each product.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver materials to Project Site in undamaged condition.
- B. Store and handle stone and related materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, or other causes.

1.07 PROJECT CONDITIONS

- A. Do not set stone when air temperature or material temperature is below 50 degF.
- B. Maintain minimum ambient temperatures of 50 degF during installation and for 7 days after completion, unless higher temperatures are required by fabricator's or supplier's instructions.
- C. Field Measurements: Verify dimensions of construction to receive stone countertops by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating countertops without field measurements. Provide allowance for trimming at site and coordinate construction to ensure actual dimensions correspond to established dimensions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Water-Cleanable Epoxy Adhesive:
 - a. Laticrete International, Inc.
 - b. Mapei Corporation.
- B. Substitutions: See Section 01 2500 - Substitution Procedures.

2.02 STONE, GENERAL

- A. Match Architect's samples for variety, color, finish, and other stone characteristics relating to aesthetic effects.
- B. Provide stone that is free of cracks, seams, and starts impairing structural integrity or function.
- C. Provide stone from a single quarry for each variety of stone required.
 1. Provide matched blocks extracted from contiguous locations in a single bed of quarry stratum unless stone from blocks randomly selected for aesthetic effect is approved by Architect.

2.03 GRANITE

- A. Granite Building Stone Standard: ASTM C 615.
- B. Association Standard: The National Building Granite Quarries Association's (NBGQA) "Specifications for Architectural Granite."

2.04 ADHESIVES AND SEALANTS

- A. Use only adhesives formulated for stone and ceramic tile and recommended by their manufacturer for the application indicated.
 1. Water-Cleanable Epoxy Adhesive: ANSI A118.3.
 2. Stone Seam Adhesive: 2-part, clear, epoxy-resin stone adhesive with a 2-hour initial set at 70 deg F.
 - a. Product: Subject to compliance with requirements, provide "Touchstone Clear Gel Epoxy" by Bonstone Materials Corporation.

3. Stone Seam Adhesive: 2-part, polyester-resin stone adhesive with a 15- to 30-minute cure at 70 deg F, in color to match stone.
 - a. Product: Subject to compliance with requirements, provide "Akemi" adhesive distributed by Wood and Stone, Inc., Manassas, VA.
- B. Sealant for Countertops: Clear silicone sealant complying with Section 07 92 00 - Joint Sealants.

2.05 STONE ACCESSORIES

- A. Setting Shims: Resilient plastic shims, nonstaining to stone, sized to suit joint thicknesses.
- B. Cleaner: Provide stone cleaners specifically formulated for stone varieties, finishes, and applications indicated as recommended by stone producer.
 1. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.

2.06 STONE COUNTERTOP FABRICATION

- A. Fabricate stone countertops in sizes and shapes required to comply with requirements indicated, including details on Drawings and Shop Drawings.
 1. For granite, comply with recommendations of National Building Granite Quarries Association's (NBGQA) "Specifications for Architectural Granite."
 2. Comply with recommendations of Marble Institute of America's (MIA) "Dimensional Stone-Design Manual IV."
- B. Thickness: Provide thickness indicated, but not less than the following:
 1. Nominal Thickness: 1-1/4 inches.
- C. Edge Detail: Provide edge detail indicated, or if not indicated, as follows:
 1. Edge Detail: Straight, slightly eased at top.
- D. Splashes: Provide 3/4-inch nominal thickness back and end splashes, 4 inches high, with the following top-edge detail, except where otherwise indicated:
 1. Top-Edge Detail: Straight, slightly eased at corner.
- E. Seams: Fabricate countertops without seams.
- F. Cutouts and Holes for Lavatories, Sinks, and Fittings: Fabricate countertops for lavatories, sinks, and fittings as follows:
 1. Undercounter Lavatories: Make cutouts for undercounter lavatories in shop using template or pattern furnished by lavatory manufacturer. Form cutouts to smooth, even curves with edges at right angles to top. Ease juncture of cutout edges with tops, and finish edges to match tops.
 2. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive stone countertops and conditions under which stone countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone countertops.
 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of stone countertops.
 2. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Advise installers of other work about specific requirements for placement of stone countertops. Furnish installers of other work with Drawings or templates showing locations of these items.
- B. Clean stone surfaces that have become dirty or stained by removing soil, stains, and foreign materials before setting.
 1. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water.

2. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

3.03 ERECTION TOLERANCES

- A. Variation from Level: Do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 3/8 inch maximum.
- B. Variation in Cross-Sectional Dimensions: For thickness indicated, do not exceed plus or minus 1/8 inch.
- C. Variation in Joint Width: Do not vary joint thickness more than 1/16 inch or one-fourth of nominal joint width, whichever is less.
- D. Variation in Plane between Adjacent Panels (Lipping): Do not exceed 1/32-inch difference between planes of adjacent units.

3.04 INSTALLING COUNTERTOPS

- A. Install countertops over plywood subtops with a full spread of water-cleanable epoxy adhesive.
- B. Bond seams with stone seam adhesive and draw tight as countertops are set.
 1. Mask areas of countertops adjacent to seams to prevent adhesive smears.
 2. Use clamps to ensure countertop units are properly aligned and seams are minimum width.
- C. Space seams with 1/16-inch gap for filling with sealant.
 1. Use temporary shims to ensure uniform spacing and use clamps to eliminate lipping.
- D. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts while cutting to prevent damage.
- E. Install back and end splashes by adhering to wall with water-cleanable epoxy adhesive. Leave 1/16-inch gap between countertop and splash for filling with sealant. Use temporary shims to ensure uniform spacing.
- F. Apply sealant to seams and to gap between countertops and splashes complying with Section 07 92 00 - Joint Sealants.

3.05 ADJUSTING

- A. Remove and replace stone countertops of the following description:
 1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
 2. Defective joints and seams.
- B. Replace in manner that results in stone countertop matching approved samples, complying with other requirements, and showing no evidence of replacement.

3.06 CLEANING AND PROTECTION

- A. Clean stone countertops using clean water and soft rags or stiff-bristle fiber brushes.
 1. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage stone.
- B. Protect stone surfaces, edges, and corners from construction damage. Use securely fastened untreated wood, plywood, or heavy cardboard to prevent damage.
- C. Before inspection for Substantial Completion, remove protective covering and clean surfaces.

END OF SECTION