

Circulation Department Alterations

Columbus Metropolitan Library

96 South Grant Avenue
Columbus, Ohio 43215

Project Manual

OWNER:

Columbus Metropolitan Library
96 South Grant Avenue
Columbus, Ohio 43215

ARCHITECT:

Ford & Associates Architects, Inc.
1500 West First Avenue
Columbus, OH 43212
Phone: (614) 488-6252

**MECHANICAL/
ELECTRICAL ENGINEER:**

Catalyst Engineering, LLC
3982 Powell Road, STE 425
Powell, OH 43065
Phone: (440) 785-2043

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Bidding & Contract Requirements

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SECTION 00 4100 – BID FORM

FROM: _____

Contact: _____

Telephone: _____ Fax: _____

TO: Columbus Metropolitan Library
96 South Grant Avenue
Columbus, Ohio 43215
Attn: Mr. Stephen Magee

FOR: Circulation Department Alterations
Columbus Metropolitan Library
96 South Grant Avenue
Columbus, Ohio 43215

The undersigned, having visited the site of the Work and having familiarized himself with the local conditions affecting the cost of his work and with all requirements of the proposed Contract Documents as prepared by the Architect, and duly issued Addenda to said Documents, as acknowledged herein, proposes to furnish all things as required by said Documents and Addenda hereto for Base Bid and Alternates stated below.

FINANCIAL STATEMENTS

If required by Owner, Contractor agrees to immediately submit its current financial statement.

CHANGES IN THE WORK

For parts of the Work not included in the Base Bid or Alternates and not covered by unit prices, the undersigned agrees to charge for additional work and credit for omitted work as Contractor's overhead and profit the following percentages of the cost of said work:

Extra _____ % Credit _____ %

BID BREAKDOWN

ADDENDUM RECEIPT

Receipt of the following Addenda to the Bidding Requirements and Contract Documents for the Shell Building Construction is acknowledged:

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

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IT IS IMPORTANT TO US THAT YOU PROVIDE YOUR BID IN SUFFICIENT DETAIL SO THAT WE CAN PROPERLY QUALIFY YOUR BID. FAILURE TO USE THE ATTACHED BID FORM AND FILLING IN ALL LINE ITEMS WILL RESULT IN DISQUALIFICATION OF YOUR BID.

DIV. 01	a. Gen. Conditions	\$ _____
	b. Bonds	\$ _____
	c. Insurance	\$ _____
	d. Permits	\$ _____
DIV. 02	Site Work	
	a. Selective Demolition	\$ _____
DIV. 06	Wood	
	a. Rough Carpentry	\$ _____
	b. Millwork and Countertops	\$ _____
DIV. 07	Thermal & Moisture Protection	
	a. Fire Stopping and Joint Sealants	\$ _____
DIV. 08	Doors & Windows	
	a. Steel Doors and Frames	\$ _____
	b. Access Doors	\$ _____
	c. Finish Hardware	\$ _____
DIV. 09	Finishes	
	a. Metal Stud Framing and Gypsum Board Sheathing	\$ _____
	b. Acoustical Ceilings	\$ _____
	c. Resilient Flooring and Base	\$ _____
	d. Carpet	\$ _____
	e. Painting	\$ _____
	f. Stripping and Resealing Existing VCT Flooring	\$ _____
DIV. 10	Specialties	
	a. Suspended Expansion Joint Cover	\$ _____
	b. Signage	\$ _____
	c. Corner Guards, Wall Protection, Crash Rail and Toe Guards	\$ _____
DIV. 21	Fire Suppression	
	a. Sprinkler System Modification	\$ _____

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DIV. 26 Electrical

- a. Electrical \$ _____
- b. Fire Alarm System \$ _____

OVERHEAD AND PROFIT \$ _____

TOTAL CONTRACT AMOUNT: \$ _____

CONTRACTOR PROPOSED ALTERNATES

Voluntary alternates proposed by the Contractor should be submitted on a separate sheet attached to this form.

TIME OF COMPLETION - ALL WORK

If awarded the Contract, the undersigned will complete the work as bid within _____ calendar days from notice to proceed.

BID GUARANTEE

The undersigned agrees that the Owner shall have the right to retain this bid for a period of sixty (60) days from the date of receiving bids and guarantee the amounts set forth herein to be firm for the same sixty (60) day period.

BID ACCEPTANCE

If written notice of the acceptance of this bid is mailed, telegraphed or delivered to the undersigned within the time noted herein, after the date of the opening of bids, or at any time thereafter before this bid is withdrawn, the undersigned agrees that he will execute a construction contract in accordance with the Bid as accepted, and, if required, will furnish security in the form of Performance and Payment Bonds with such surety or sureties as the Owner may approve, the bonds to be paid for the Owner, all within 10 days (unless a longer period is agreed) from date of such written notice.

It is understood and agreed that the Owner reserves the right to award the contract to his best interest, to reject any or all bids, to waive any information in bidding, and to hold all bids for the bid guarantee period.

Signed and sealed this _____ day of _____, 20_____.

Business Name

Business Address

Telephone

By: _____
Printed Name of Signer

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Signature

Title

END OF DOCUMENT

SECTION 00 5000 - CONTRACT AGREEMENT AND BOND FORMS

PART 1 - GENERAL

1.1 Contract Agreement Forms

- A. Agreement between Owner and Contractor will be an AIA Document A101, Standard Form of Agreement Between Owner and Contractor where the Basis of Payment is a Stipulated Sum, 2007 Edition.
- B. The General Conditions shall be a modified AIA Document A201, General Conditions of the Contract for Construction, 2007 Edition.

1.2 Bonds Forms

- A. If a Performance Bond required by the Owner, The Labor and Material Payment Bond will be AIA Document A311, Labor and Material Bond, latest edition. The Performance Bond and the Labor and Material Payment Bond shall be made out for one hundred percent (100%) of the Contract amount. The Bonds shall be issued by a company approved by the Owner.

END OF SECTION

Division 1

General Requirements

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Ford & Associates Architects

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SECTION 01 1010 – SUMMARY OF WORK

PART 1 GENERAL

1.1 Related Documents

- A. AIA Document A201, General Conditions of the Contract for Construction - 2007 Edition are incorporated in full to this document by reference. Rights and responsibilities of the Owner, Architect and General Contractor shall be as defined in the before referenced document.
- B. Contract Documents for the **Circulation Department Alterations** as prepared by Ford & Associates Architects, Inc. dated November 3, 2017.

1.2 Summary

- A. Project Description: The construction consists of interior alterations within the lower level Circulation Department area within the Columbus Metropolitan Library. The area of work is approximately 3,477 square feet as described in the documentation issued by Ford & Associates Architects, Inc. dated December 7, 2017. Work shall include, but is not limited to the following:
 - 1. Selective demolition and all interior improvements (i.e. partitions, doors, door hardware, millwork, wall and floor finishes and new acoustical ceilings).
 - 2. New lighting.
 - 3. Electrical work.
 - 4. Reconfiguration of the break room sprinkler head.
 - 5. New access panel within the existing electrical room.
 - 6. Stripping and re-sealing existing VCT floor tile.

1.3 Contractor Use of Premises

- A. General: During the construction period the contractor shall have ***limited*** use of the premises for construction operations, including use of the site.
 - 1. Contractor shall confine operations to areas within Contract limits as established by the Building Owner. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed. Contractors will not interfere with surrounding building use areas that will remain open during construction. The General Contractor shall coordinate work schedules, site access, staging areas, refuse areas, and parking and parking garage access with the Building Owner's Construction Representative.
 - 2. Contractor shall keep driveways and entrances serving the premises clear at all times. Do not use these areas for parking or storage of material. Schedule deliveries to minimum space and time requirements for storage of materials and equipment on site.
 - 3. Prior to substantial completion, contractor shall remove all temporary utilities, equipment, facilities, and materials from the site. Clean and repair damage caused by temporary work and restore permanent facilities to specified condition.

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B. Hours of Work: Hours of work shall be limited to times that the area is not staffed.

The hours of operations for the Circulation Department are listed below. ALL work must take place outside these listed hours.

Monday through Thursday: 8am-9pm

Friday 8am-6pm

Saturday 8am-6pm

Sunday 12pm-5pm

Additional hours of work must be coordinated with the Building Owner's Construction Representative.

END OF SECTION

SECTION 01 1040 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 Section Includes

- A. This Section specifies administrative and supervisory requirements provided by the General Contractor, necessary for Project Coordination including, but not necessarily limited to:
 - 1. Coordination.
 - 2. Layout of work.
 - 3. Administrative & supervisory personnel.
 - 4. General installation provisions.
 - 5. Cleaning and protection.

1.2 Related Requirements

- A. General Contractor's Construction Schedule

1.3 Coordination

- A. General Contractor: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
 - 1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
 - 2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Where necessary, Contractor shall prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1. Prepare similar memoranda for the Owner and separate Subcontractors where coordination of their Work is required.
- C. Administrative Procedures: General Contractor shall coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.

5. Project Close-Out activities.
 - D. Progress Schedule: The progress schedule will be developed by the General Contractor. Each subcontractor will provide input into the schedule. He will be requested to furnish information regarding allowances required for producing submittals, fabrication, delivery and pertinent dates for the completion of his work. The General Contractor may, from time to time, adjust the schedule to a longer or shorter duration as he deems necessary.
 - E. Project Meetings: The General Contractor will conduct regular Job site Progress Meetings on a schedule to be determined after award of Subcontracts. Each meeting is to be attended by the Subcontractor's on-site superintendent or foreman. A representative of the subcontractor who is authorized to obligate the company to issues of schedule, manpower and problem solving decisions for the subcontractor will also attend each meeting.

1.4 Layout of Work

- A. General Contractor: Coordinate work with other trades and schedule partition layout to expedite the work. Other trades shall be responsible for locating and coordinating their work.
 1. Locate site work items, including curbs, walks, and other items to facilitate proper placement of exterior light fixtures, catch basins, manholes, and similar construction which is located by the appropriate subcontractor.

1.5 Submittals

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Staff Names: Subcontractor shall within 7 days of Notice to Proceed, submit a list of the Subcontractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify key individuals, their duties and responsibilities; list their addresses and telephone numbers.
 1. General Contractor shall post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 General Installation Provisions

- A. Inspection of Conditions: Require Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

- B. **Manufacturer's Instructions:** Subcontractor shall comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Subcontractor shall inspect materials or equipment immediately upon delivery and again before installation. Reject damaged and defective items.
- D. Subcontractor shall provide attachment and connection devices and methods necessary for securing work. Secure Work true to line and level. Allow for expansion and building movement.
- E. **Visual Effects:** Subcontractor shall provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Contractor for final decision by the Architect.
- F. Subcontractor shall recheck measurements and dimensions, before starting each installation.
- G. Subcontractor shall install each component during weather conditions and Project status to ensure best possible results. Isolate each part of completed construction from incompatible material as necessary to prevent deterioration.
- H. Subcontractor shall coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

3.2 Cleaning and Protection

- A. During handling and installation, subcontractor shall clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. **General Contractor:** Repair damages to new and existing work caused by work operations and back charge to responsible trade. Damages which cannot be assigned to a particular trade or are due to vandalism shall be the responsibility of the trade whose work is damaged and his sureties.

END OF SECTION

SECTION 01 1045 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 Section Includes

- A. This Section specifies general requirements for cutting, fitting, and patching of the Work required to:
 - 1. Make the several parts fit properly.
 - 2. Uncover work to provide for installing, inspecting, or both, of ill-timed work.
 - 3. Remove and replace work not conforming to requirements of the Contract Documents.
 - 4. Remove and replace defective work.
 - 5. Remove samples of work for testing.
 - 6. Provide openings in elements of work for penetrations such as piping, conduit, and duct work.
 - 7. Repair damage.

1.2 Quality Assurance

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 Inspection

- A. Before cutting existing surfaces, subcontractor shall examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.

3.2 Cutting and Patching

- A. Each Subcontractor shall perform all cutting and patching as required to complete his work, unless specifically noted otherwise.
- B. General: Subcontractor shall employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
- C. Cutting, when necessary, shall be done with tools and methods to prevent unnecessary damage to surrounding areas or equipment. No cutting shall be done which will, in any way reduce the structural strength. If such cutting is necessary, consult General Contractor and do not proceed with cutting operations unless written approval is given.
- D. Patching: Subcontractor shall patch with durable seams that are as invisible as possible. Comply with specified tolerances.
 - 1. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
- E. The final appearance and integrity of the patched and refinished areas must meet the approval of the Architect and General Contractor. Refinishing must extend to logical termination lines if an acceptable appearance cannot be attained by finishing a partial area.
 - 1. When, in the Architect's or General Contractor's opinion, satisfactory results cannot or have not been achieved, defective surfaces shall be covered with approved finish materials adequately fastened and aligned.

3.3 Cleaning

- A. Subcontractor shall thoroughly clean areas and spaces where cutting and patching is performed or used as access.

END OF SECTION

SECTION 01 1070 - ABBREVIATIONS

Part 1 - GENERAL

1.1 Section Includes

- A. This Section describes abbreviations used throughout these Specifications.

1.2 Abbreviations

- A. Throughout these Specifications reference to a technical society, organization or body is by abbreviations and shall refer as follows:

AA	Aluminum Association
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ABPA	Acoustical and Board Products Association
ACI	American Concrete Association
AGA	American Gas Association
AGC	American General Contractors
AHC	Architectural Hardware Consultant
AI	Asphalt Institute
AIA	American Institute of Architects
AIA	American Insurance Association
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
APA	American Plywood Association
ARI	Air Conditioning and Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPB	American Wood Preservers Bureau
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWSC	American Welding Society Code
AWI	Architectural Woodwork Institute
AWWA	American Water Works Association
BIA	Brick Institute of America
BOCA	Building Officials Conference of America

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CLFMI	Chain Link Fence Manufacturer's Institute
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards
CSI	Construction Specifications Institute
CTI	Cooling Tower Institute
FGMA	Flat Glass Marketing Association
FIA	Factory Insurance Association
FM	Factory Mutual
FS	Federal Specifications
FTI	Facing Tile Institute
GA	Gypsum Association
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
LEED	Leadership in Energy and Environmental Design
LIA	Lead Industries Association
MAG	Maricopa Association of Governments
MIA	Marble Institute of America
MIA	Masonry Institute of America
MLMA	Metal Lath Manufacturers Association
MS	Military Specifications
NAAMM	National Association of Architectural Metal Manufacturers
NBC	National Building Code
NBHA	National Builders Hardware Association
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association/ National Forest Products Association
NGA	National Glass Association
NKCA	National Kitchen Cabinet Association
NMWIA	National Mineral Wool Insulation Association
NTMA	National Terrazzo and Mosaic Association
NWMA	National Woodwork Manufacturer's Association
PCI	Precast Concrete Institute
PCA	Portland Cement Association
PDI	Plumbing Drainage Institute
PEI	Porcelain Enamel Institute

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PS	Product Standards
SDI	Steel Door Institute; Steel Deck Institute
SIGMA	Sealed Consulting Glass Manufacturer's Association
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SSBC	Southern Standard Building Code
SSPC	Steel Structures Painting Council
TCA	Tile Council of America
TIMA	Thermal Insulation Manufacturers Association
TPI	Truss Plate Institute
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
USDA	United States Department of Agriculture
USGBC	United States Green Building Council
USPS	United States Postal Service
VI	Vermiculite Institute
WCLA	West Coast Lumberman's Association
WCLB	West Coast Lumber Bureau
WIA	Woodwork Institute of Arizona
WPOA	Western Plumbing Officials Association
WWPA	Western Wood Products Association

END OF SECTION

SECTION 01 3000 – ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 Section Includes

- A. Preconstruction meeting.
- B. Progress meetings.
- C. Progress photographs.
- D. Submittals for review, information, and project closeout.
- E. Number of copies of submittals.
- F. Submittal procedures.
- G. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
 - 1. Permits.
 - 2. Applications for payment.
 - 3. Performance and payment bonds.
 - 4. Release of Liens.
 - 5. Insurance certificates.

1.2 Related Requirements

- A. Inspection and test reports for Quality Control - Ref: See Individual Sections.
- B. Project Close-out – Ref: Section 01 7000:
 - 1. Record Drawings.
 - 2. Operating and Maintenance Manuals.
 - 3. Guaranty/Warranty Documents.

PART 2 – PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 Preconstruction Meeting

- A. Contractor will schedule a meeting within 5 business days of date established in Notice to Proceed.
- B. Attendance Required:
 - 1. Owner.
 - 2. Owner's Representative.
 - 3. Architect.
 - 4. Contractors Project Manager and Superintendent.

5. Major Subcontractors.
 6. Testing Agency.
 7. Others as appropriate.
- C. Agenda:
1. Project Coordination: Designation of responsible personnel.
 2. Distribution of Contract Documents.
 3. Submission of list of Subcontractors, schedule of values, and progress schedule.
 4. Major equipment deliveries and priorities.
 5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 6. Procedures for testing and inspection.
 7. Use of premises:
 - a. Jobsite trailers/meeting areas, work and storage areas.
 - b. Owner's requirements.
 8. Temporary utilities.
 9. Safety and first-aid procedures.
 10. Security procedures.
 11. Housekeeping procedures.
 12. Scheduling.
 13. Scheduling activities of Testing Agency.
- D. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.2 Progress Meetings

- A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, as appropriate to agenda topics for each meeting.
- D. Agenda
 1. Review minutes of previous meetings.
 2. Review of Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede, or will impede, planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of off-site fabrication and delivery schedules.
 7. Maintenance of progress schedule.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.

10. Maintenance of quality and work standards.
 11. Effect of proposed changes on progress schedule and coordination.
 12. Other business relating to Work.
- E. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.3 Progress Photographs

- A. Photography Type: Digital; electronic files.
- B. Take photographs that apply to work under construction and submit promptly to Owner.
1. Completion of Demolition.
 2. Completion of Work.
- C. Digital Photographs: 24 bit color, minimum resolution of 1600 by 1200 ("2 megapixel"), in JPG format; provide files unaltered by photo editing software.
1. Delivery Medium: Via email.
 2. File Naming: Include project identification, date and time of view, and view identification.
 3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 4 photos per page, each photo labeled with file name; one PDF file per submittal.

3.4 Submittals for Review

- A. Contractor shall submit newly prepared information, drawn to accurate scale and are to be prepared by a qualified detailer. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings. When the following are specified in individual sections, submit them for review:
1. Product data.
 2. Shop drawings.
 3. Samples for selection.
 4. Samples for verification.
- B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed only for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 – CLOSEOUT SUBMITTALS.

- E. Job delays occasioned by requirement of resubmission of samples, shop drawings and product data not in accord with contract Documents are Contractor's responsibility and will not be considered valid justification for extension of contract time.
- F. Commence no portion of work requiring submittals until submittal has been reviewed by Architect.

3.5 Submittal Schedule

- A. Subcontractors shall prepare and submit to General Contractor before first Application for Payment a proposed Schedule of Submittals including shop and setting drawings. Schedule of submittals shall indicate anticipated dates submittals will be submitted for review and be coordinated with the Construction Schedule so as to permit a **minimum of two weeks** for review and approval of each submittal by Architect and Project Engineers while allowing sufficient time for fabrication and shipment to maintain the Construction Schedule.
 - 1. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:
 - a. Scheduled dated for the first submittal.
 - b. Related Section number.
 - c. Submittal category.
 - d. Name of Subcontractor.
 - e. Description of the part of the Work covered.
 - f. Scheduled date for resubmittal, if anticipated.
 - g. Scheduled date of Architect's final release or approval.
 - h. **SEE ATTACHED SUBMITTAL SCHEDULE.**
- B. Schedule Updating: Revise schedule where revisions have been recognized or made. Issue the updated schedule information to General Contractor.
- C. Large sets of shop drawings requiring more than two weeks for review must be specifically provided for in schedule. Simultaneous submittals of multiple sets of shop drawings and other voluminous submittals shall be avoided. The schedule is subject to review and approval of General Contractor and Architect.

3.6 Product Data

- A. **Four (4)** copies of product data shall be submitted as required in various specification sections.
- B. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, rough-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings".
 - 1. **Mark each copy to show applicable choices and options.** Where printed Product Data includes information on several products, some of

which are not required, mark the copies to indicate the applicable information. Include the following information:

- a. Manufacturer's printed recommendations.
 - b. Compliance with recognized trade association standards.
 - c. Compliance with recognized testing agency standards.
 - d. Application of testing agency labels and seals.
 - e. Notation of dimension verified by field measurement.
 - f. Notation of coordination requirements.
 - g. Show wiring and controls.
2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 3. Submittals: Submit one (1) reproducible copy and three (3) sets of prints of each required submittal to General Contractor. Submit two (2) extra copies where required for maintenance manuals. Copies will be retained as indicated for shop drawings.

3.7 Samples

- A. Samples shall be submitted as required in various specification sections and include physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.
- B. Office Samples: Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
 1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's Sample. Include the following:
 - a. Generic description of the Sample.
 - b. Sample source.
 - c. Product name or name of manufacturer.
 - d. Compliance with recognized standards.
 - e. Availability and delivery time.
 - f. Where variation in color, pattern, texture, or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.
 - g. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details or assembly, connections, operation and similar construction characteristics.
- C. Field samples and Mock-ups: Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.
 1. Erect at Project site at location acceptable to Architect and Owner.

2. Construct each sample or mock-up complete, including Work of all trades required in finished Work.
 3. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.
- D. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 physical samples; two will be returned marked with the action taken.
1. Maintain record of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.

3.8 Submittals for Project Closeout

- A. When the following are specified in individual sections, submit them at project closeout:
1. Operation and maintenance data.
 2. Warranties.
 3. Other types as indicated.
- B. Submit for Owner's benefit during and after project completion.

3.9 Number of Copies of Submittals

- A. Documents for Review:
1. ***It is preferable to submit one electronic copy in PDF format in lieu of hard copies. An electronically-marked up file will be returned. Create PDFs at native size and right-side up. Illegible files will be rejected.***
 2. If hard copies are submitted, submit the number of copies that Contractor requires, plus two copies that will be retained by Architect.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
1. Dimensions.
 2. Identification of products and materials included.
 3. Compliance with specified standards.
 4. Identify by reference to the sheet and detail numbers shown on Contract Drawings.
 5. Notation of coordination requirements.
 6. Notation of dimensions established by field measurement.
 7. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8½ "x 11" but no larger than 24" x 36".
 8. Submittal: **Four (4) sets** of prints for all shop drawings direct to General Contractor who shall review shop drawings and make further distribution to Architect.
- C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
1. After review, produce duplicates.

2. Retained samples will not be returned to Contractor unless specifically so stated.
- D. Documents for Project Closeout: Provide an electronic copy in PDF format of all reviewed submittals. See Section 01 7800 – Project Closeout.

3.10 Contractor's Responsibilities

- A. Review Submittals, prior to submission, for compliance with Construction Documents. The Contractors review of each Submittal shall be indicated by stamp, date and signature of a responsible person.
- B. Verify:
 1. Field measurements.
 2. Field construction criteria.
 3. Catalog numbers and similar data.
- C. Coordinate each submittal with requirements of Work and Contract Documents.
- D. Contractor's responsibility for errors and omissions in submittals is not relieved by Architect's review of submittals.
- E. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Architect's review of submittals, unless Architect gives written acceptance of specific deviations.
- F. Notify Architect in writing at time of submission, of deviations in submittals from requirements of Contract Documents.
- G. Begin no work which requires submittals until return of submittals with Architect's stamp and initials or signature indicating review.
- H. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities.
 1. Do not proceed with installation until an applicable copy of Product Data is in the installer's possession.
 2. Do not permit use of unmarked copies of Product Data in connection with construction.

3.11 Submittal Procedures

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

- a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.
 - a. Allow **two weeks** by the Architect for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
 - b. No extension of Contract Time will be authorized because of failure to transmit submittals to the General Contractor sufficiently in advance of the Work to permit processing as specified.
- B. Large sets of shop drawings requiring more than two weeks for review must be specifically provided for in schedule. Simultaneous submittals of multiple sets of shop drawings and other voluminous submittals shall be avoided. The schedule is subject to review and approval of General Contractor and Architect.
- C. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
 1. Include the following information on the label for processing and recording action taken.
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name and address of Contractor.
 - e. Name and address of Subcontractor.
 - f. Name and address of supplier.
 - g. Name of manufacturer.
- D. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 1. An imprint of the stamp, signed and dated by the Contractor, shall be made above the title block of the submitted shop drawings, on product data in a location which will not obscure the information, or on a tag used to identify samples and similar submittals.
 2. Shop drawings which do not bear the imprint of the stamp, signed and dated by the Contractor, or which do not reasonably comply with the Contract Documents shall be returned to the Contractor, shipping charges collect, and without the Architects review.
- E. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from subcontractor to General Contractor using a transmittal form. Submittals received from sources other than the subcontractor will be returned without action.

1. On the transmittal record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

3.12 Architect's Action

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.
 1. Compliance with specified characteristics is the subcontractor's responsibility as indicated in Agreement Form.
- B. Action Stamp: Architect will stamp each submittal with a uniform, self-explanatory action stamp. Stamp will be appropriately marked, as follows, to indicate the action taken:
 1. Final Unrestricted Release: Where submittals are marked "**Reviewed**", that part of the work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
 2. Final-But-Restricted Release: When submittals are marked "**Furnish as Corrected**", that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
 3. Returned for Resubmittal: When submittal is marked "**Revise and Resubmit**", do not proceed with that part of the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat to obtain a different action mark.
 - a. Do not permit submittals marked "Resubmit" to be used at the Project site or elsewhere where Work is in progress.
 4. Return for Resubmittal: When submittal is marked "**Rejected**", do not proceed with that part of the work covered by the submittal. Submittal has failed to comply with specification. Prepare a new submittal to comply with construction documents and resubmit without delay.
 5. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "**For Information Only**".
- C. Review of separate items does not constitute review of an assembly.
- D. Architect's review is solely for compliance with the design intent of the project and information given in the contract Documents.

END OF SECTION

SECTION 01 5000 - TEMPORARY FACILITIES

PART 1 – GENERAL

1.1 Section Includes

- A. This Section specified requirements for temporary services and facilities, including temporary utilities, temporary construction and support facilities, and temporary security and protection.
- B. Temporary utilities required include but are not limited to:
 - 1. Temporary electric service for power and light.
 - 2. Temporary lighting.
- C. Temporary construction and support facilities required include but are not limited to:
 - 1. Temporary heat.
 - 2. Field offices and storage sheds.
 - 3. Temporary sanitary facilities, including drinking water.
 - 4. Temporary construction barriers.
 - 5. Waste disposal services.
 - 6. Temporary roads, site access, and parking.
 - 7. Rodent and Pest Control.
- D. Security and protection facilities required include but are not limited to:
 - 1. Temporary fire protection.
 - 2. Barricades, warning signs, lights.
- E. Related Sections:
 - 1. Protection for public, employees, and occupants - Ref: AIA Document A201.
 - 2. Cutting and patching - Ref: Section 01 1045.
- F. General Requirements Relating to Temporary Facilities:
 - 1. Any Subcontractor requiring temporary service facilities before it can be provided as specified, or whose requirements with respect to a particular service differ from the service specified shall provide service as required to meet his needs, at his own expense and in a manner satisfactory to General Contractor and Architect.
 - 2. Each Subcontractor shall be responsible for his own necessary temporary drainage for his work and shall use trenches, drains, sumps, or other necessary elements as required to afford satisfactory working conditions for execution and completion of the work of all Subcontractors and to protect all work.
 - a. Pumping of water from excavations (including site utilities) shall be done by each Subcontractor as required for their work.

3. Subcontractor shall maintain temporary facilities and keep in good operating condition of the entire construction period. Provide maintenance men necessary to perform this work. Maintenance time will include normal working hours for all trades and start up and shut down overtime as required.
4. Permanent building equipment and devices used for provisions of temporary hoisting, heating, power, light, water and sanitation shall be put in new condition immediately before final acceptance by Owner. Unless stated otherwise, the warranty for all equipment and devices listed above shall be for a period of one year following date of Substantial Completion.

1.2 Quality Assurance

- A. Regulations: Comply with all U.S. Department of Labor OSHA requirements, industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:
 1. Building Code requirements.
 2. Health and safety regulations.
 3. Utility company regulations.
 4. Police, Fire Department and Rescue Squad rules.
 5. Environmental protection regulations.
- B. Inspections: If required by local code officials, arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.3 Contractor Use of Premises

- A. General: During the construction period the contractor shall have **limited** use of the premises for construction operations, including use of the site.
 1. Contractor shall confine operations to areas within Contract limits as established by the Building Owner. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed. Contractors will not interfere with surrounding adjacent properties that will remain open during construction. The General Contractor shall coordinate work schedules, site access, staging areas, refused areas, and parking and parking garage access with the Building Owner's Construction Representative.
 2. Contractor shall keep driveways and entrances serving the premises clear at all times. Do not use these areas for parking or storage of material. Schedule deliveries to minimum space and time requirements for storage of materials and equipment on site.
 3. Prior to substantial completion, contractor shall remove all temporary utilities, equipment, facilities, and materials from the site. Clean and repair damage caused by temporary work and restore permanent facilities to specified condition.

- B. Hours of Work: Hours of work shall be limited to times that the area is not staffed.**

The hours of operations for the Circulation Department are listed below. ALL work must take place outside these listed hours.

Monday through Thursday: 8am-9pm
Friday 8am-6pm
Saturday 8am-6pm
Sunday 12pm-5pm

Additional hours of work must be coordinated with the Building Owner's Construction Representative.

1.4 Project Conditions

- A. Conditions of Use: Subcontractor shall keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.
- B. Temporary work shall be installed in a manner to not interfere with permanent construction. If interferences do occur, it shall be the Subcontractor's responsibility to make required changes to overcome the interference.
- C. Subcontractors shall restore all damaged off-site and on-site paved areas used for storage and by construction vehicles to conditions equal to or better than original.
- D. Coordinate and cooperate with General Contractor in scheduling work and using spaces, including parking spaces and driveways.

PART 2 - PRODUCTS

2.1 Materials

- A. General: Subcontractor shall provide new materials; if acceptable to Architect and General Contractor, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for use intended.
- B. Water: Provide potable water approved by local health authorities.

2.2 Equipment

- A. General: Provide new equipment; if acceptable to General Contractor and Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. First Aid Supplies: Comply with governing regulations.
- C. Fire Extinguisher: Provide hand-carried, portable UL-rated, class "A" fire extinguisher for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguisher, or a combination of extinguisher of NFPA recommended classes for the exposures.
 - 1. Comply with NFPA 1- and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

2.3 Temporary Electric Service for Power and Lighting

- A. Electrical Contractor: Provide labor and material for installation and maintenance of temporary light and power for construction purposes for all trades including cost of running or extending temporary service from the utility supply.
- B. Service shall consist of weatherproof, grounded electric service and distribution systems of sufficient size, capacity, and power characteristic during construction period. Include panelboards, grounding, branch circuits, switches, transformers, overload protected disconnects, automatic ground-fault necessary to provide a complete operating system including any special power company fees.
 - 1. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.
 - 2. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.
 - 3. Power Distribution System: Install wiring overhead, and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.
- C. Layout, balance, and size temporary wiring to produce a voltage drop of no more than 5 percent at the extreme end of the line when operating at full load.
- D. Electrical Contractor shall be responsible for a safe and satisfactory temporary wiring installation, shall maintain entire system at all times and remove temporary wiring when permanent wiring is installed.

- E. Each Subcontractor using temporary electrical service shall furnish their own extension cords, receptacle plugs, and adopters. (See also "Field Offices and Storage Sheds" in this Section for additional requirements.)
- F. Temporary services to heavy equipment, such as hoists and lifts, will be the responsibility of Subcontractors requiring the temporary service.
- G. No temporary wiring, fittings, receptacles, or other parts of the temporary system shall be used in the permanent electrical installation.
- H. Cost of electrical power consumed during construction period shall be paid by General Contractor until Substantial Completion.

2.4 Temporary Sanitary Facilities, Including Drinking Water

- A. Sanitary facilities include temporary toilets, wash facilities, and drinking water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best service project needs.
- B. General Contractor: Provide temporary portable self-contained chemical type toilets, acceptable to public health authorities.
- C. Each Subcontractor shall provide his own drinking water.

2.5 Temporary Construction Barriers and Fences

- A. Construction Fence: General Contractor shall construct and maintain a temporary construction fence where indicated with suitable access gates to remain until building can be secured.
- B. Provide and maintain temporary stairs, ladders, ramps, railings, guards, runways, and similar constructions required for proper execution of the work of all trades to protect and secure the site from the public, and to allow the public safe access around the site.

2.6 Waste Disposal Services

- A. General Contractor: Responsible to keep the entire project site in a clean and sanitary condition during the entire progress of the Work and shall post and take precautions to keep the site clean.
 - 1. Provide a dumpster or other trash container of adequate size for use by all Subcontractors. Rental and dump fees shall be paid by the General Contractor.
- B. Each Subcontractor: Maintain project site in a neat and orderly manner. Remove daily packaging material and other debris from his work and deposit in

trash container or other location indicated by General Contractor. Areas shall be left broom clean at the end of each construction activity.

1. Comply with NFPA 241 requirements for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 degrees F. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly.
- C. If Subcontractors do not clean up and dispose of their waste materials in a reasonable length of time, General Contractor will do the required work. Cost of the work will be charged to responsible Subcontractor.
- D. General Contractor shall remove any unidentifiable debris as it accumulates.

2.7 Site Access and Parking

- A. Parking:
1. On-site parking by Subcontractors and workers will be provided as directed by the Building Owner.

2.8 Barricades, Warning Signs, and Lights

- A. Each Subcontractor shall provide, maintain, and remove all barricades, warning lights, and other safety devices required for the security, protection, and safety of his work and employees as well as the public.
- B. Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform Contractor's and Owner's personnel and the general public of hazards being protected against.
1. Provide lighting, including flashing red or amber lights, when required at barricades, railings, obstructions in streets, drives, or sidewalks and at all trenches or pits adjacent to public walks or roadways.
- C. General Contractor: Maintain safety barricades through construction process and remove when directed.
- D. Each Subcontractor: Plan and conduct work operations so traffic is maintained at all times on adjacent streets and drives. Furnish lights, signs, barricades, and watchmen necessary for safe flow of traffic, 24 hours daily.

2.9 Watchman Services

- A. Watchman service is not required of the project. Job security is the responsibility of each Subcontractor. If any Subcontractor desires watchman service, they shall provide the service at their own cost.

PART 3 - EXECUTION

3.1 Installation

- A. Subcontractor shall use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.2 Temporary Utilities Installation

- A. General: Employ appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, Subcontractor shall provide remaining work with matching, compatible materials and equipment complying with the company's recommendations.
 - 1. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services. If required this work shall be performed after normal working hours with no additional cost to the General Contractor or Owner.
 - 2. Provide adequate capacity at each stage of construction. Before temporary utility availability, provide trucked-in services.
 - 3. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner, General Contractor, or Architect, and will not be accepted as a basis of claims for a Change Order.

3.3 Temporary Construction and Support Facilities Installation

- A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access.
 - 1. Maintain temporary construction and support facilities until near Substantial Completion. Remove before Substantial Completion, unless otherwise accepted by the General Contractor. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the General Contractor.
- B. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise.

3.4 Operation, Termination and Removal

- A. Supervision: Subcontractor shall enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Subcontractor shall maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 - 1. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. General Contractor: Keep surrounding streets and properties clear of mud and construction debris. Subcontractors shall cooperate with General Contractor in keeping streets clean.
- D. Termination and Removal: Unless General Contractor requests that it be maintained longer, Subcontractor shall remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of the subcontractor.

END OF SECTION

SECTION 01 6310 - PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 Section Includes

- A. This Section specified administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

1.2 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 Subcontractor after award of the Contract are considered requests for "substitutions." The following are not considered substitutions.
 - 1. Substitutions requested in writing by Bidders during the bidding period, and accepted before award of Contract, are considered as included in the Contract Documents and are not subject to requirement specified in this Section for substitutions.
 - 2. Specified options of products and construction methods included in Contract Documents.
 - 3. The Subcontractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.3 Submittals

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Substitution Request Submittal: Requests will be considered after start of the Work.
 - 1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.
 - 2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
 - b. Samples, where applicable or requested.
 - c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.

- d. Coordination information, including a list of changes or modifications needed to other parts of the Work, and to construction performed by the Owner and separate Contractors that will become necessary to accommodate the proposed substitution.
 - e. A statement indicating the substitution's effect on the Subcontractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - g. Certification by the Subcontractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Subcontractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
3. 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, whichever is later, the Architect will notify the General Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a propose substitute cannot be made or obtained within the time allocated, use the product specified by name.

PART 2 - PRODUCTS

2.1 Substitutions

- A. Conditions: The Subcontractor's substitution request will be received and considered by the Architect and General Contractor when one or more of the following conditions are satisfied, as determined by the Architect and General Contractor; 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 request is directly related to an "or equal" clause or similar language in the Contract Documents.
 5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 7. 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. Additional responsibilities of the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Subcontractors, and similar considerations.
 8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Subcontractor certifies that the substitution will overcome the incompatibility.
 9. The specified product or method of construction cannot be coordinated with other materials, and where the subcontractor certifies that the proposed substitution can be coordinated.
 10. The specified product or method construction cannot provide a warranty required by the Contract Documents and where the Subcontractor certifies that the proposed substitution provide the required warranty.
 11. Where a proposed substitution involves more than one Subcontractor, each Subcontractor shall cooperate with the other Subcontractors involved to coordinate the Work, provide uniformity and consistency, and to assure compatibility of products.
- B. The subcontractor's submittal and Architect and General Contractor'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

SECTION 01 6320 – SUBSTITUTION REQUEST FORM

To: _____ Project: _____

We hereby submit for your consideration the following product instead of the specified item described as:

Specified Item: _____

Item specified in: Section _____ Section Title _____ Paragraph _____ Page _____

Proposed Substitution: _____

The reason for this substitution: _____

Attach complete product description, drawings, photographs, performance and test data, and other information necessary for evaluation. Identify specific model numbers, finishes, options, etc. Note: For substitutions of items in Divisions 1 through 14, send additional copy of request with attachments to the Architect.

Will changes be required to the building design in order to properly install proposed substitutions?

Yes _____ No _____ If Yes, explain: _____

Will the undersigned pay for changes to the building design, including engineering and drawings costs, caused by the requested substitution?

Yes _____ No _____

List differences between proposed substitution and specified item below:

Specified Item:

Proposed Substitution:

Does substitution affect drawing dimensions? Yes _____ No _____

If Yes, explain: _____

What effect does substitution have on other trades? _____

Circulation Department Alterations
Columbus Metropolitan Library
96 South Grant Avenue
Columbus, Ohio 43215

FAA Project No: 17174.00

*Does manufacturer's warrant of proposed substitution differ from that specified? Yes No*_____

If Yes, explain: _____

Will substitution affect progress schedule: Yes _____ No _____

If Yes, explain: _____

Will substitution require more license fees or royalties than specified product? Yes _____ No _____

If Yes, explain: _____

Will maintenance & service parts be locally available for substitution? Yes _____ No _____

If Yes, explain: _____

Does the substitution contain asbestos in any form? Yes_ No _____

Date Submitted: _____ **Firm:** _____

Submitted by: _____ **Address:** _____

Signature: _____ **Telephone:** _____

For Architect's Use Only:

Accepted: _____

Accepted as Noted: _____

Not Accepted: _____

Received Too Late: _____

Reviewed by: _____

Date: _____

Remarks: _____

SECTION 01 7000 - PROJECT CLOSE-OUT

PART 1 - GENERAL

1.1 Section Includes

- A. This Section specifies administrative and procedural requirements for project close-out, including but not limited to:
 - 1. Inspection procedures for Substantial Completion and Final Completion.
 - 2. Project record document submittal.
 - 3. Operating and maintenance manual submittal.
 - 4. Submittal of warranties.
 - 5. Final cleaning.
 - 6. Close-out requirements for specific construction activities are included in the appropriate Sections in Division 3 through 26.

1.2 Substantial Completion

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, Subcontractor shall complete the following. List all exceptions in the request.
 - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - 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 General Contractor of pending insurance change-over requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 - 4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
 - 5. Submit record drawings, maintenance manuals, and similar final record information.
 - 6. Deliver tools, spare parts, extra stock, and similar items.
 - 7. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
 - 8. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
- B. Inspection Procedures: On receipt of a request for inspection, Architect, General Contractor and Representatives from Owner will either proceed with inspection or advise Subcontractor of unfilled requirements. General Contractor will prepare the Certificate of Substantial Completion following inspection, or advise Subcontractor

of construction that must be completed or corrected before the certificate will be issued.

1. When Subcontractor believes the Work is Substantially Complete, he shall notify the General Contractor in writing and accompany the letter with his Punch List of items to be completed and corrected before final completion. General Contractor will verify this list and then schedule with Architect and Subcontractor for inspection.
2. Architect and Consulting Engineers will observe Work, verify Substantial Completion has been reached, and verify Subcontractor's Punch List or amend it. Verified or amended Punch List will be attached to Certificate of Substantial Completion.
3. If, in Architect and General Contractor's judgment, project cannot be considered Substantially Complete, he shall notify subcontractor of items to be completed or corrected before Certificate of Substantial Completion can be issued.
4. If subcontractor's Punch List is inadequate and an excessive number of items remain to be completed or corrected, the Work will not be considered Substantially Complete and the review terminated.
 - a. Architect and Consulting Engineers will make only two inspections to determine Substantial Completion. If the Work is not Substantially Complete, successive inspections required will be back charged to subcontractor at the Architect's and Consulting Engineer's current billing rate, including mileage and travel time.
 - b. Payment to subcontractor may be withheld from subcontractor's remaining payment due to compensate for this cost.
5. Results of the completed inspection will form the basis of requirements for final acceptance.

1.3 Final Acceptance

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, Subcontractor shall complete the following. List all exceptions in the request.
 1. Submit final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 2. Submit an updated final statement, accounting for final additional changes to the 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 list has been endorsed and dated by Architect and General Contractor.
- B. Re-inspection Procedure: Architect and General Contractor will re-inspect the Work upon receipt of notice that 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 and General Contractor.

1. Upon completion of re-inspection, Architect will prepare a certificate of final acceptance or advise Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. Architect and Consulting Engineers will make only one inspection to determine final completion. If Work is not finally complete, successive inspections required shall be back charged to subcontractor at Architect's and Consulting Engineer's Current billing rate, including mileage and travel time.
 - a. Payment to subcontractor may be withheld from subcontractor's remaining payment due to compensate for this cost.

1.4 Record Document Submittals

- A. Upon receiving the approval of the Final Inspection, Contractor shall prepare, assemble and transmit the items listed herein within ten days.
 1. Project Record Documents:
 - a. Submit three (3) copies of a complete set of reviewed shop drawings to Architect in electronic PDF format.
 - b. Submit one hard copy of the as-built drawings to Architect for review.
 2. Warranties, Bonds, and Operation and Maintenance Data: Submit one hard copy of the items listed to Tenant representative and Architect for review. Make any requested revisions to the submittal, and upon satisfactory completion, submit 4 copies in electronic PDF format.

1.5 Project Record (As Built) Documents

- A. The Contractors' Responsibilities are stipulated in the General Conditions.
 1. As-built documents shall be made available for review during weekly progress meetings. The in-progress as-built documents shall be neatly and accurately marked to reflect the actual construction of the project in relation to the work that had been completed to the date of the meeting. The Contractor shall provide the A/E with the final and complete as-built documents upon final completion of the work.
 2. Operations and Maintenance Manuals shall be made available for review during weekly progress meetings. The manuals shall be submitted as equipment and systems are installed and prior to Demonstration and Training.
- B. Maintain on site one set of the following record documents; record actual revisions to the Work:
 1. Drawings.
 2. Specifications.
 3. Addenda.
 4. Change Orders and other modifications to the Contract.
 5. Reviewed shop drawings, product data, and samples.
 6. Manufacturer's instructions for assembly, installation, and adjusting.
- C. Ensure entries are complete and accurate, enabling future reference by Tenant.

- D. Store record documents separate from documents used for construction.
- E. Record information concurrent with construction progress.
- F. Record Drawings and Shop Drawings: Contractor legibly mark each item to record actual construction and provide one (1) red-lined copy to the Architect/Engineers upon completion for updating by Architect/Engineers. On a complete set of prints, include:
 - 1. Measured depths of foundations in relation to finish first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Contract drawings.

1.6 Operation and Maintenance Manuals

- A. Operations and Maintenance Manuals. The Architect shall review the contractor's submittals of manuals for correctness and sufficiency of data and, after approving the contents and format, shall obtain the number of copies required, including three (3) copies for resubmittal to the Tenant Architect.
 - 1. Format for Manuals: Manuals shall consist of manufacturers' typed or printed operation instructions and maintenance data, shop drawings or catalog cuts, and other data listed herein; all bound in 8-1/2" x 11" hardback binder. Material shall be assembled as follows:
 - a. **INSIDE COVER:** Title of job, The Ohio State Tenant, address, date of submittal, name of contractor and name of manufacturer.
 - b. **SECOND PAGE:** Index
 - c. **THIRD PAGE:** Introduction to first section containing a complete written description of the equipment or system.
 - d. **FIRST SECTION:** Written description of system contents, where equipment is located in building, how each part functions individually and how system works as a whole, concluded with a list of items requiring service and the service needed or reference to the manufacturer's data in the binder which describes proper service.
 - e. **SECOND SECTION:** A copy of each shop drawing with an index at the beginning of the section.
 - f. **THIRD SECTION:** A Copy of manufacturer's operating instructions with an index at the beginning of the section.
 - g. **FOURTH SECTION:** A list of all equipment incorporated into job, contractor's purchase order numbers, supplier's name and address.

1.7 Affidavits and Guarantees

- A. In addition to the standard form required by the contract documents, the following extended guarantees are required.
 - 1. Flashing and sheet metal work: 10 year maintenance guarantee.

2. Sealants: 5 year guarantee.

1.8 Record Shop Drawing Submittals

- A. Contractor to provide a complete set of approved shop drawings submittals.

1.9 Warranties and Bonds

- A. General Building Warranty
 1. Provide the industry standard guarantees for all general construction which is customary in the trade, but in no event is less than one (1) year from Date of Substantial Completion, covering labor and materials for entire Site and Building Work.
- B. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Completion is determined.
- C. Verify that documents are in proper form, contain full information, and are notarized.
- D. Include photocopies of each in operation and maintenance manuals, indexed separately on Table of Contents.
- E. Manual: Bind in commercial quality 8-1/2 by 11 inch binders with durable plastic covers.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 Close-out Procedures

- A. Substantial Completion
 1. When the Contractor considers the work substantially complete, he shall submit to the Architect/Owner's Representative:
 - a. A written notice that the work or designated portion thereof is substantially complete.
 - b. A list of items remaining to be completed or corrected.
 2. Within a reasonable time after receipt of such notice, the Architect, Owner's Representative and the Contractor will make an inspection to determine the status of completion.
 3. When the Architect, Owner's Representative and Contractor have concurred that the work is substantially complete, the following documents will be completed by the Contractor and submitted to the Owner's Representative and Architect simultaneously:

- a. Certificate of Substantial Completion on AIA Form G-704.
 - b. Punch-list of items remaining to be completed or corrected.
 - c. Contractor shall complete all punch list items within 15 days.
- B. Final Inspection
1. When Contractor considers work to be complete, he will submit written certification to the Architect and Owner's Representative verifying that:
 - a. Work has been completed and inspected in accordance with the Contract Documents.
 - b. Equipment and systems have been tested in the presence of the Owner's Representative and are operational.
 - c. Contractor to arrange for a Final Inspection.
 2. After receipt of written Certification, the Architect and Owner's Representative will make an inspection to verify the status of completion of the punch list items.
 3. Should the Architect and Owner's Representative determine that the work is incomplete or defective:
 - a. Architect and Owner's Representative will promptly notify Contractor, in writing, listing the incomplete or defective work.
 - b. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second Certification to the Architect and Owner's Representative that the Work is complete.
 - c. The Architect and Owner's Representative will re-inspect the Work.
 4. When the Architect and Owner's Representative find that the work is acceptable under the Contract Documents, he shall request the Contractor to make Close-out Submittals.
- C. Contractor's Close-out Submittals to Architect and Owner's Representative
1. Contractor must submit to Architect and Owner's Representative evidence of compliance with requirements of governing authorities.
 - a. Certificate of Occupancy
 - b. Certificate of Inspections
 1. Mechanical
 2. Plumbing
 3. Electrical
 4. Fire Marshall
 5. Building
 2. Contractor must submit to Architect and Owner's Representative all Project Record Documents to the requirements of each respective section in this Project Manual, i.e.: Schedules, Operating and Maintenance Data, Warranties and Bonds, Keys and Keying Schedule, Evidence of Payment and Release of Liens, Certificates of Insurance, etc.
- D. Final Application for Payment
1. Before final payment can be released to the Contractor and subsequently to the Subcontractors, the Contractor shall submit to the Owner's Representative all items as listed on the attached "Project Close-out

- Checklist". Subcontractor shall submit same to the Contractor in the quantity identified.
2. Contractor shall submit to Owner's Representative, along with items as listed on "Project Close-out Checklist", the Final Statement of Accounting on AIA Form G702.

3.2 Final Cleaning

- A. General: General cleaning during construction is required by the General Conditions and included in Section 01500, Temporary Facilities.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
 1. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
 - a. Remove labels that are not permanent labels.
 2. General Contractor:
 - a. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Leave concrete floors broom clean.
 - b. Clean the site of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are not paved or planted, to a smooth even-textured surface.
- C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.
 1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION

Division 6

Wood, Plastics and Composites

**Circulation Department Alterations
Columbus Metropolitan Library**

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Columbus, Ohio 43215

Ford & Associates Architects

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SECTION 06 1000 – ROUGH CARPENTRY

PART 1 - GENERAL

1.1 Section Includes

- A. Rough carpentry includes carpentry work not specified as part of other sections and which is generally not exposed, except as otherwise indicated. This Section includes the following:
 - 1. Wood blocking and nailers.
 - a. Miscellaneous concealed wall, roof, soffit, fascia nailers and blocking.
 - b. Wood and compressible fire blocking (firestopping).
 - 2. Miscellaneous:
 - a. Wood framing anchors, fasteners and accessories.
 - b. Installing rough hardware furnished by finish hardware supplier under Division 8.
 - c. Temporary closures.
 - d. Anchorage devices and rough hardware as required.
 - e. Anchorage for wall mounted equipment and accessories.
 - 3. Fire retardant treated wood materials.

1.2 Related Requirements

- A. Wall Sheathing – Ref: Section 09 2116.
- B. Painting - Ref: Section 09 9000.

1.3 Reference Standards

- A. ASTM A 153/A 153M – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- B. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials; 2010.
- C. AWPA C2 – Lumber, Timber, Bridge Ties and Mine Ties – Preservative Treatment by Pressure Processes; American Wood Protection Association; 2003.
- D. AWPA C20 – Structural Lumber – Fire Retardant Treatment by Pressure Processes; American Wood-Protection Association; 2003.
- E. AWPA C27 – Plywood – Fire-Retardant Treatment by Pressure Processes; American Wood-Protection Association; 2002.
- F. AWPA U1 – Use Category System: User Specification for Treated Wood; American Wood Protection Association; 2010.

- G. PS 20 – American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

1.4 Submittals

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Wood Treatment Data: Submit chemical treatment manufacturer's instructions for handling, storing, installation and finishing of treated material.
 - 1. Preservative Treatment: For each type specified, include certification by treating plant stating type of preservative solution and pressure process used, net amounts of preservative retained and conformance with applicable standards.
 - 2. For water-borne treatment include statement that moisture content of treated materials was reduced to levels indicated prior to shipment to project site.
 - 3. Fire-retardant Treatment: Provide test record for treatment in compliance with applicable standards.
- C. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicated species and grade selected for each use and design values approved by the American Lumber Standards Committee Board of Review.
- D. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
 - a. Wood-preservative-treated wood.
 - b. Engineered wood products.
 - c. Power-driven fasteners.
 - d. Powder-actuated fasteners.
 - e. Expansion anchors.
 - f. Metal framing anchors.
 - g. Building air infiltration barriers.
 - h. Sill sealer.

1.5 Quality Assurance

- A. Lumber Standards: Comply with PS 20 and with applicable rules of the respective grading and inspecting agencies for species and products indicated.
- B. Plywood Product Standards: Comply with PS 2–92 or for products not manufactured under PS 2-92 provisions or APA PRP-108 Performance Standards, with applicable APA performance standards for type panel indicated.
- C. References
 - 1. ALSC - American Lumber Standards Committee.
 - 2. APA - American Plywood Association.
 - 3. AWPA - American Wood Preservers Association C-1.

4. National Design Specification for Wood Construction, by the National Forest Products Association, 1991 Edition.
5. U.S. Product Standard PSI-83.

1.6 Product 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 materials.
 1. For lumber and plywood pressure treated with waterborne chemicals, sticker between each course to provide air circulation.

1.7 Project Conditions

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

PART 2 – PRODUCTS

2.1 General Requirements

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 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.
- B. Lumber fabricated from old growth timber is not permitted.

2.2 Construction Panels

- A. Construction Panel Standards: Comply with PS 2 "U.S. Product Standard for Construction and Industrial Plywood" for plywood panels and for products not manufactured under PS 2 provisions, with American Plywood Association (APA) "Performance Standard and Policies for Structural-Use Panels", Form No. E445.
- B. Trademark: Factory-mark each construction panel with APA trademark evidencing compliance with grade requirements.
- C. Concealed APA Performance-Rated Panels: Where construction panels will be used or the following concealed types of applications, provide APA Performance-Rated Panels complying with requirements indicated for grade designation, span

rating, exposure durability classification, edge detail (where applicable) and thickness.

- D. Refer to "General Structural Notes" on Structural Drawings for additional material requirements.

2.3 Plywood Backing Panels

- A. Communications and Electrical Room Mounting Boards: APA rated sheathing, A-D or better, fire retardant treated; ¾ inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E 84.

2.4 Factory Wood Treatment

- A. Preservative treatment materials "Alkaline Copper Quaternary (ACQ)" by Chemical Specialties, Inc. form the basis-of-design. Products with comparable materials, properties and performance by the following manufacturers are also acceptable. Products containing arsenic and chromium not permitted.
1. Osiose, Inc.
- B. Preservative Treatment Materials:
1. Material:
 - a. "Preserve": Standard arsenic- and chromium-free ACQ wood preservative.
 2. Material Standards: Comply with the following AWPA Standard Use Categories:
 - a. UC1: Interior no ground or foundation contact.
 - b. UC2: Interior damp areas.
 - c. UC3A: Exterior above ground, coated.
 - d. UC3B: Exterior above ground, finished.
 - e. UC4A: Exterior ground or freshwater contact.
 - f. UC4B: Exterior ground or freshwater contact, severe environments.
 - g. UC4C: Exterior ground or freshwater contact, very severe environments.
- C. Materials to be treated:
1. Lumber: Nominal 2" thick, Construction, Stud, or No. 2. grade dimension lumber.
 2. Plywood: APA Rated Sheathing, Exposure 1.
- D. Preservative Treatment by Pressure Process: AWPA C2.
1. Lumber not in contact with the ground and continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).
- E. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.

1. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- F. Applications: Treat items indicated on Drawings and the following.
1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping and similar members in connection with roofing, flashing, vapor barriers and waterproofing.
 2. Wood sills, sleepers blocking, furring, stripping and similar concealed members in contact with masonry or concrete.
 3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
 4. Wood framing members that are less than 18" above the ground in crawlspaces or unexcavated areas.
 5. Wood floor plates that are installed over concrete slabs-on-grade.
- G. Fire Retardant Treatment:
1. Interior Type A: AWWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E 84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat rough carpentry items as indicated.
 - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

2.5 Dimension Lumber Framing

- A. Maximum Moisture Content: 19 percent.
- B. Non-Load-Bearing Interior Partitions: Construction, Stud or No. 2 grade of any species.
- C. Load-Bearing Interior and Exterior Framing: No. 2 Spruce-pine-fir; Nelma, NLGA, WCLIP, or WWPA, or better.
- D. Lumber for rough framing, furring, blocking, etc., shall be spruce-pine-fir #1/#2, or better, surfaced at 19 percent. Provide preservative treated materials where noted.
1. Joists, beams rafters, and stud framing: $F_b = 875/1000$, $F_v = 70$, $F_c = 725$, $E = 1,300,000$ psi.
 2. For fire-retardant treated lumber the allowable design stresses have been reduced by the following factors: $F_b = 0.85$, $F_v = .82$, $F_c = .81$, $F_t = .80$, $E = 0.90$.

2.6 Miscellaneous Lumber

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking and nailers.
 - 2. Rooftop equipment bases and support curbs.
 - 3. Cants, furring and grounds.
- B. For items of dimension lumber size, provide Construction, Stud or No. 2 grade lumber with 19 percent maximum moisture content of any species.
- C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine, No. 2 grade; SPIB.
 - 2. Eastern softwoods, No. 2 Common grade; NeLMA.
 - 3. Northern species, No. 2 Common grade; NLGA.
 - 4. Western woods, Construction or No. 2 Common grade; WCLIB or WWPA.
- D. Provide preservative treated materials where indicated or required.

2.7 Fasteners

- A. General: Provide fasteners of type, size and length required for installation conditions.
- B. Treated Wood Materials:
 - 1. Preservative Treated Materials:
 - a. Hot-Dip Galvanized: Conform to ASTM-A153 (hot-dip fastener products) and ASTM-A653 (coating designation G-185 for hot-dip connector and sheet products) for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 - b. Stainless Steel: Type 304 or 316.
 - c. Aluminum: Not permitted for use with ACQ (Alkaline Copper Quaternary) pressure-treated wood.
 - 2. Verify fastener requirements with treatment manufacturer.
- C. Power-Driven Fasteners: NES NER-272. Expansion shield and lag bolt type for anchorage to solid masonry or concrete.
- D. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and flat washers.
- E. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete.

2.8 Temporary Closures

- A. Doors: Batten doors with locks at exterior openings.
- B. Openings: Preservative treated plywood and framing as required to close opening.
- C. Maintain appropriate protection against weather and danger of life throughout the work.

PART 3 - EXECUTION

3.1 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. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.2 Inspection

- A. Verify that surfaces to receive rough carpentry materials are prepared to required grades and dimensions.

3.3 Installation

- A. General:
 - 1. Accurately cut and fit items with close joints to proper plane and alignment.
 - 2. Rigidly secure members, free of warp or bend to maintain proper alignment and to adequately resist design loads.
 - 3. Linear runs of material shall be formed using lengths as great as practicable.
 - 4. Where multiple members are used to form linear runs, offset joints in member not less than 3 feet.
- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. Table 2304.9.1 "Fastening Schedule," in the Ohio Building Code.
- D. Set rough carpentry to required levels and lines, with members plumb, true to line, cut and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

1. Install wood framing, blocking, nailers and/or bracing, to comply with requirements for attaching other construction and supports required to support construction during formative stages.
2. Install wood framing, blocking and nailers between roof trusses at top and bottom chords. Provide additional framing and blocking required to install roof sheathing and gypsum wall board ceiling. Align framing with top and bottom chords.
3. Install necessary concealed wood blocking in partitions to assure rigid anchorage of equipment, cabinets, toilet partitions and accessories, fire extinguishers and cabinets, and other items indicated to be surface or recessed mounted. Blocking and framing for subsequently applied work reviewed and approved by Contractor prior to installation of finish materials.
4. Metal Framing Anchors: Install metal framing to comply with manufacturer's written instructions.
5. Do not splice structural members between supports, unless otherwise indicated.
6. Provide temporary barricades, railings, doors, ladders or stairs as required. Maintain temporary items for the life of the work or as directed.
7. Set miscellaneous rough hardware in connection with carpentry work.
8. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
9. Install non-staining protective wood covers for corners and edges subject to soiling and damage.

END OF SECTION

SECTION 06 6220 – MILLWORK

PART 1 - GENERAL

1.1 Summary

- A. This Section includes interior woodwork for the following applications:
 - 1. Plastic-laminate base cabinets.
 - 2. Accessories.
 - 3. Solid Surface countertop.

1.2 Related Requirements

- A. Blocking for millwork anchorage - Ref: Section 06 1000.

1.3 Reference Standards

- A. ANSI A135.4 – American National Standard for Basic Hardboard; 2004.
- B. ANSI A208.1 – American National Standard for Particleboard; 1999.
- C. ANSI A208.2 – American National Standard for Medium Density Fiberboard for Interior Use; 2009.
- D. AWI/AWMAC/WI (AWS) – Architectural Woodwork Standards; 2009.
- E. AWI/AWMAC (QSI) – Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.
- F. NEMA LD 3 – High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.
- G. PS 20 – American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

1.4 Submittals

- A. Product Data: For the following:
 - 1. Cabinet hardware and accessories.
 - 2. Handrail brackets.
 - 3. Finishing materials and processes.
- B. Submit shop drawings for countertops and casework.
 - 1. Provide large scale details.
 - 2. Indicate methods of fabrication, edging, location and construction of joints.

- C. AWI Quality Standards: A photocopy of the applicable portions of the AWI publication "Architectural Woodwork Quality Standards", latest edition, shall be submitted with each set of shop drawings.
 - 1. Each copy must be market to clearly show all details, specifications and finishes proposed for this work.
- D. Samples
 - 1. Plastic laminate-clad panel products, for each type, color, pattern, and surface finish.
 - 4. Thermoset decorative-overlay surfaced panel products, for each type, color, pattern, and surface finish.
- E. Submit samples of the following:
 - 1. Plastic laminate for texture and color selections.
 - 2. Cabinet hardware (1 of each type).
 - 3. Solid surface material.
- F. Manufacturer's product data describing type and quality of the following:
 - 1. Plastic laminate (face grade and liner grade).
 - 2. Cabinet hardware (each type).
- G. Submit certification that fire-retardant treatment materials comply with governing ordinances and meet or exceed ASTM E84 tests. Include certification by treating plant that treatment will not bleed through finish surfaces. Materials shall bear UL label showing Flame Spread 25 or less and smoke developed 40 or less. Mill certification is not acceptable.

1.5 Definitions

- A. Exposed Portions of Casework: Include surfaces visible when doors and drawers are closed. Bottoms of casework more than 4 feet above floor and tops less than 6 feet 6 inches above floor shall be considered as exposed. Visible members in open cases or behind glass doors also shall be considered as exposed portions.
- B. Semi-Exposed Portions of Casework: Includes those members behind opaque doors, such as shelves, divisions, interior faces of ends, case back, drawer sides, backs and bottoms, and back face of doors. Tops of casework 6 feet 6 inches or more above floor shall be considered semi-exposed.
- C. Concealed Portions of Casework: Include sleepers, web frames, dust panels, and other surfaces not usually visible after installation.

1.6 Quality Assurance

- A. Fabricator qualifications: A firm specializing in the fabrication of millwork with a minimum of 5 years experience and a satisfactory record of performance on projects of comparable size and quality. Fabricator shall be acceptable to the Architect.

- B. Installation: Performed only by skilled finish carpenters with a minimum of 3 years experience in installing custom millwork similar to that required for this project.
- C. All solid surface material type work shall be performed by a Manufacturer Certified fabricator.
- D. Provide lumber factory marked with type, grade, mill and grading agency identification on concealed surfaces. Omit marking and submit mill certificates for materials to receive transparent finishes that cannot be marked on a concealed surface.
- E. Adhesive VOC Content Standards: South Coast Air Quality Management District (SCAQMD) Rule #1168, "Adhesive and Sealant Applications", State of California.

1.7 Delivery, Storage and Handling

- A. Protect woodwork materials and items during delivery, storage and handling to prevent damage, soiling and deterioration.
- B. Do not deliver woodwork materials and items until concrete, masonry, painting, grinding and other similar wet work has been completed and is thoroughly dry, outside door openings are permanently watertight, exterior windows are glazed and, in case of temperature dropping below 60° F., until temporary heating and ventilating systems are in operation.
- C. Store materials in dry, well-ventilated spaces with constant minimum temperature of 60° F, and maximum relative humidity of 55%.
 - 1. Do not store adhesives with materials that have a high capacity to absorb VOC emissions (i.e., materials which are woven, fibrous or porous in nature, such as acoustical ceilings, carpets, textiles, etc.).
 - 2. Do not store adhesives in occupied spaces.

1.8 Project Conditions

- A. Environmental Limitations: Deliver and install woodwork after building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.
- B. Obtain measurements and verify dimensions and details before proceeding with architectural woodwork.

PART 2 - PRODUCTS

2.1 Materials

- A. Particle Board (Substrate for Laminate Surfaces): High density industrial grade with a minimum density of 45 pounds per cubic foot and a moisture content

between 9% maximum and 6% minimum, meeting or exceeding ASNI A208.1 or ASTM D1047; formaldehyde-free.

- B. Medium Density Fiberboard (MDF): Thickness as specified unless otherwise indicated on Drawings. Maximum moisture content of 8%. Formaldehyde free. Meet the following minimum standards:
1. Internal Bond: 90 psi.
 2. Modulus of Rupture: 3,000 psi.
 3. Modulus of Elasticity: 300,000 psi.
 4. Screw Holding Power: 325 pounds.
 5. Density: Minimum 50 pounds per cubic foot.
- C. Plastic Laminate: Conform to the requirements of the National Electrical Manufacturer's Association (NEMA) Publication Number LD-3. Plastic laminate shall be FORMICA, PIONITE, NEVAMAR or WILSONART. Colors, patterns and finishes shall be as noted on the drawings.
9. General Purpose Grade: 0.05 inches thick.
 10. Backing Sheet Grade: 0.02 inches thick.
 11. Post Forming Grade: 0.042 inches thick.
 12. Cabinet Liner: 0.02 inches thick.
 13. Provide solid color type where indicated on drawings.
 14. Fill and seal plastic laminate joints with Seamfil by KAMPEL ENTERPRISES, INC. or equal. Colors to match plastic laminate.
- D. Hardware Items: All exposed hardware to be satin chrome finish.
1. Drawer Slides: Self-closing, side mounting type with nylon tire, steel ball-bearing rollers. Manufactured by BLUM, GRASS, AMEROCK, KNAPE & VOGT; ACCURIDE. Load capacity as follows:
 - a. 75 pounds: Drawers up to 3-1/2 inches deep: Similar to ACCURIDE Series 2132.
 - b. 100 pounds: Drawers up to 8 inches deep: Similar to ACCURIDE Series 2832.
 - c. 150 pounds: Drawers over 8 inches deep, all file drawers: Similar to ACCURIDE Series 4034.
 2. Drawer and Door locks: 5-pin tumbler, dead bolt. BEST; NATIONAL LOCK; CORBIN. Provide 2 keys per cylinder.
 3. Concealed Hinges: European style, self-closing, type as required for construction. Metallamet by HAFELE; similar by GRASS; PRAMETE; BLUM.
 4. Continuous Hinge: 780 HD Roton Hinge by HAGER. Aluminum with finish as selected by Architect.
 5. Continuous Hinge: Piano type.
 6. Drawer and Door Pulls: Wire pull, 5/16" diameter x 3-1/3" long x 1-5/16" extension. STANLEY, GRASS, BLUM, HAFELE.
 7. Adjustable Cabinet Shelf Supports: KNAPE & VOGT (KV) steel nickel plated.
 - a. Standards: KV #255 NP for dado installation.
 - b. Clips: KV #256 NP.

8. Surface Mount Shelf Supports: KNAPE & VOGT (KV); NEWTECH HARDWARE; SUGATSUNE AMERICA, steel cadmium plated heavy duty double slotted supports.
 - a. Standards: Equivalent to KV #85; unless otherwise indicated 48 inches high, maximum 30 inch spacing.
 - b. Brackets: Equivalent to KV #185; unless otherwise indicated, 3 per standard, for 10 inch shelf.
 9. Catches: Magnetic, STANLEY #45 or equal by NATIONAL LOCK or EPCO.
 10. Grommets: High impact ABS cable hole cover, with spring closure or slide closure in top. color as selected by Architect. Refer to Drawings for locations and sizes. Manufactured by DOUG MOCKETT, BAINBRIDGE MANUFACTURING or US FUTUBA.
 11. Additional Items: As indicated on the casework details.
- E. Adhesive: Low-VOC, FS MMM0A0125C, Type II, water- and mold-resistant; complying with required VOC regulations:
1. VOC Content: The volatile organic compound (VOC) content of adhesives shall not exceed the limits defined in Rule #1168 "Adhesive and Sealant Applications" of the South Coast Air Quality Management District (SCAQMD), of the State of California. All VOC limits are defined in grams per liter, less water and less exempt compounds (determined by U.S. EPA Reference Test Method 24). The VOC limits are as follows:
 - a. Water-based contact cement: 250 g/L
 - b. Water-based construction adhesive: 100 g/L
 - c. Plastic laminate adhesive: 50 g/L.
- F. Solid Surface Material: Corian by DU PONT, AVONITE, FORMICA, Gibraltar by WILSONART. Color as selected by Architect from manufacturer's full range. ½" or ¾" inch thick sheets, laminate as to provide for 1-1/2" edge thickness.
1. **SS-1:** As noted on the drawings.
 3. Provide ½' thick back and side splashes as indicated on the drawings.
 4. Surface burning characteristics in accordance with ASTM E 84: Class I or A, and as follows:
 - a. Flame spread: <25.
 - b. Smoke developed: <25.
 - c. Joints: Provide watertight, fused joints as recommended by manufacturer.
 - d. Edge Treatment: As detailed on drawings. Ease all exposed edges not otherwise detailed.
 - e. Make field cut-outs as required to install plumbing items and toilet accessories.

2.2 Installation Materials

- A. Furring, Blocking, Shims and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.

- B. Laminate Adhesives: CS 35 Type II water-resistant type as recommended by plastic laminate manufacturer. Provide CS 35 Type I waterproof type at countertop containing sinks or lavatories.

2.3 Fabrication

- A. General: Complete fabrication to maximum extent possible before shipment to Project site. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.
1. Shop cut openings to maximum extent possible. Sand edges of cutouts to remove splinters and burrs.
 2. Seal edges of openings in countertops with a coat of varnish.
 3. Install glass to comply with applicable requirements in Division 08 Section "Glazing" and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.
 4. For trim items wider than available lumber, use veneered construction. Do not glue for width.
 5. Back-out or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.
 6. Assemble casings in plant except where limitations of access to place of installation require field assembly.
- B. Plastic-Laminate Cabinets:
1. AWI Type of Cabinet Construction: Flush overlay.
 2. Reveal Dimension: ½".
 3. Core materials:
 - a. Drawer Sides and Backs: Solid-hardwood lumber.
 - b. Drawer bottoms: Hardwood plywood.
 - c. Doors: Medium density particleboard or fiberboard.
 4. Laminate for Exposed Surfaces: High-pressure decorative of grade indicated.
 - a. Horizontal Surfaces Other Than Tops: HGS, 0.048" thick.
 - b. Vertical Surfaces: HGS, 0.048" thick.
 - c. Edges: HGS, 0.048" thick.
 - d. Post-formed Surfaces: HGP, 0.039" thick.
 5. Materials for Semi-exposed Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, Grade VGS 0.028" thick.
 6. Colors, Patterns, and Finishes: As selected from manufacturer's full range of solid colors.
 7. Provide dust panels of ¼" plywood or tempered hardboard above compartments and drawers, unless located directly under tops.
 8. Cabinet Hardware:
 - a. Concealed hinges.
 - b. Wire pulls at each door and drawer.
 - c. Adjustable shelf supports at 2 ¼" o.c., two pair per shelf.
 - d. Drawer slides, one pair per drawer, sized as indicated.
 - e. Drawer and door locks as indicated.

- f. Door bumpers; One pair per door.

2.4 Shop Finishing

- A. Finish architectural woodwork at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation.
- B. Back-priming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling.
- C. 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: Premium.
 - 2. AWI Finish System: TR-4, conversion varnish.
 - 3. Stain Colors: As indicated on drawings; Final stain colors as selected by Architect to match approved samples.
 - 4. Wash Coat for Stained Finish: Apply a vinyl wash coat to woodwork made from closed-grain wood before staining and finishing.
 - 5. Sheen: Semi-gloss, 55-75 gloss units.

PART 3 – EXECUTION

3.1 Preparation

- A. Condition architectural woodwork materials, items and products to average prevailing humidity conditions in installation areas before installing.
- B. Install blocking and anchoring devices built into substrates for anchorage of architectural woodwork.
- C. Deliver inserts and anchoring devices to be built into substrates well in advance of time substrates are to be built.
- D. Before installing woodwork, examine shop-fabricated work for completion and back priming.
- E. Ventilation for Adhesives: Comply, at a minimum, with the adhesive manufacturers' recommendations for space ventilation during and after installation. Maintain the following ventilation conditions during the adhesive curing period or for 72 hours after installation (whichever is longer): 1) supply 100% outside air 24 hours a day; 2) supply airflow at a rate of 6 air changes per hour, when outside air temperatures are between 55° F and 85° F and humidity is between 30% and 60%; and 3) supply airflow at a rate of 1.5 air changes per hour, when outside air conditions are not within the range stipulated in the previous item 2.

3.2 Installation

- A. Quality: Comply with AWI Section 1700.
- B. Install woodwork materials and products plumb, level, true and straight with no distortion. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level)including countertops, window stools and shelves), and with 1/16" maximum offset in flush adjoining surfaces, 1/8" maximum offsets in revealed adjoining surfaces.
- C. Scribe and cut work to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.
- D. Install countertops level, true to alignment, accurately fit to wall conditions and securely fastened to base units and other support systems as indicated.
 - 1. Solid Surface Type Countertops: Form joints using tinted adhesive as recommended by top manufacturer.
- E. Casework: Install without distortion so that doors and drawers will fit openings properly and be accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
- F. 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. Use fine finishing nail for exposed nailings, countersunk and filled flush with woodwork.
- G. Plastic Laminate Countertops: Fasten plastic-laminate countertops by screwing through comer blocks of base units into underside of countertop. Form seams using splines to align adjacent surfaces, and secure with glue and concealed clamping devices designed for this purpose.
 - 1. Set applied backsplashes in bead of clear silicone sealant. Remove excess material.
 - 2. Caulk space between backsplash and wall with clear silicone sealant.

3.3 Cleaning and Protection

- A. Repair damaged and defective millwork to eliminate functional and visual defects. Where not possible to repair properly, replace millwork as directed by the Architect.
 - 1. Chipped, scratched or patched plastic laminate will not be accepted and must be replaced.
- B. Clean hardware, lubricate and make final adjustments for proper operation.

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- C. Protect installed work during remaining construction operations.
- D. Clean woodwork on exposed and semi-exposed surfaces. Touch-up shop applied finishes to restore damaged or soiled areas.
- E. Cover completed casework with 4-mil polyethylene film protective enclosure, applied in a manner that will allow easy removal and without damage to woodwork or adjoining work. Remove cover immediately before the time of final acceptance.

END OF SECTION

Division 7

Thermal and Moisture Protection

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Ford & Associates Architects

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SECTION 07 8400 - FIRESTOPPING

PART 1 - GENERAL

1.1 Section Includes

- A. Provide labor, materials, services, coordination, and equipment necessary for complete installation of tested or engineering judgment based firestopping materials and systems. Section includes firestopping for the following existing locations:
 - 1. Penetrations through fire resistance rated floor 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.
 - a. Gaps between the top of walls and ceilings assemblies.
 - b. Openings around structural members which penetrate floors or walls.
 - 5. Walls enclosing plenum spaces, rated and unrated.
 - a. Gaps between the top of walls and ceilings or roof assemblies.
 - b. Openings around items which penetrate walls.
 - 6. Others:
 - a. Terminations of fire-rated construction; walls and partitions.
 - b. **Existing deficiencies at penetrations in existing CMU and gypsum board walls and partitions.**

1.2 Related Requirements

- A. Gypsum Wallboard Partitions – Ref: Section 09 2116.

1.3 Reference Standards

- A. American Society for Testing and Materials (ASTM)
 - 1. E119: Fire Tests of Building Construction Materials.
 - 2. E814: Fire Tests of Through Penetration Fire Stops.
 - 3. E2174: Standard Practice for On-Site Inspection of Installed Fire Stops.
- B. National Fire Protection Association (NFPA)
 - 1. 70: National Electrical Code (NEC)
 - 2. 101: Code for Safety to Life from Fire in Buildings and Structures (Life Safety Code).
- C. Underwriters' Laboratories (UL)

1. UL1479 Fire Tests of Through Penetration Fire Stops.
- D. Firestop Design Classification References
1. Warnock Hersey Listing Manual.
 2. UL Fire Resistance Directory – Vol. 1

1.4 Submittals

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's specifications and technical data for each material including the composition and limitations, documentation of UL or other nationally recognized independent testing laboratories firestop systems to be used, and manufacturer's installation instructions.
1. Manufacturer's engineering judgment identification number and drawing details when no tested system is available.
- C. Shop drawings detailing materials, installation methods, and relationships to adjoining construction for each through-penetration firestop system, and each kind of penetrating item. Include firestop design designation of qualified testing and inspecting agency evidencing compliance with requirements for each condition indicated.
1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop configuration for construction and penetrating items.
 2. Where project conditions require modification of qualified testing and inspecting agency's illustration to suit a particular through-penetration firestop condition, submit illustration approved by firestopping manufacturer with modifications marked.
- D. Product certificated signed by manufacturers of firestopping products certifying that their products and installation comply with specified requirements. Certification shall be signed by the Installer.
- E. Certification is required from manufacturer that installer has been trained in the handling and installation of their products.
- F. Firestopping installer shall provide a letter of certification stating that all firestopping systems have been installed in accordance with the Contract Documents.

1.5 Definitions

- A. Firestopping: Material or combination of materials (assembly) to retain integrity of fire rated construction by maintaining an effective barrier against the spread of flame, smoke, and gases.

- B. Through-penetration: Any penetration of a fire-rated wall or floor that completely breaches the barrier.
- C. Through-Penetration Firestop Systems: Material or combination of materials which are field constructed of fill, void, or cavity materials and forming materials, designed to resist fire spread when installed as a complete firestop system.
- D. Through-Penetration Firestop Devices: Factory built products designed to resist fire spread. Complete when delivered to site; ready for installation.
- E. System: The 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).
- F. Barrier: Any bearing or non-bearing wall or floor that has an hourly fire and smoke rating.
- G. Membrane-penetration: Any penetration in a fire-rated wall that breaches only one side of the barrier.
- H. Fire Resistive Joint: Any gap, joint, or opening, whether static or dynamic, between two fire rated barriers including where the top of a wall meets a floor; wall edge to wall edge applications; floor edge to floor edge configurations; floor edge to wall.
- I. Perimeter Barrier: Any gap, joint, or opening, whether static or dynamic, between a fire rated floor assembly and a non-rated exterior wall assembly.

1.6 System Performance Requirements

- A. System Design and Product Selection: Subcontractor responsible for selection of products and tested designs that fulfill the firestopping requirements of this section.
- B. General: Provide firestopping systems that are produced and installed to resist the spread of fire, according to requirements indicated, and the passage of smoke and other gasses.
- C. F-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with F ratings indicated as determined per ASTM E814, UL 1479 but not less than that equaling or exceeding the fire resistance rating of the constructions penetrated.
- D. T-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with T ratings, in addition to F ratings, as determined per ASTM E814, where indicated and where systems protect penetrating items exposed to contact with adjacent materials in occupiable floor areas. T-rated assemblies are required where specified by codes or where the following conditions exist:

1. Where firestop systems protect penetrations located outside of wall cavities.
 2. Where firestop systems protect penetrations located outside fire resistive shaft enclosures.
 3. Where firestop systems protect penetrations located in construction containing doors required to have a temperature rise rating.
 4. Where firestop systems protect penetrating items larger than a 4 inch diameter nominal pipe or 16 square inch in overall cross sectional area.
- E. Fire Resistive Joint Sealants: Provide joint sealants with fire resistance ratings indicated, as determined per ASTM E119, UL 1479 and UL 2079 but not less than that equaling or exceeding the fire resistance rating of the construction in which the joint occurs.
- F. For firestopping exposed to traffic, moisture, and physical damage, provide products that do not deteriorate when exposed to these conditions and will meet load requirements.
1. For piping penetrations for plumbing and wet pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 2. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved either by installing floor plates or by other means.
 3. For penetrations involving insulated piping, provide through-penetration firestop systems not required removal of insulation.
- G. For through-penetration firestop systems exposed to view, provide products with flame spread of less than 25 and smoke developed ratings of less than 450, as determined per ASTM E 84.
- H. Where there is no specific third party tested and classified firestop system available for an installed condition, the contractor shall obtain from the firestopping material manufacturer an Engineering Judgment (EJ) to be submitted to the Approving Authority and Authority Having Jurisdiction for approval prior to installation. The EJ shall follow International Firestop Council (IFC) guidelines.

1.7 Quality Assurance

- A. Meet requirements of ASTM E814 or UL 1470 tested assemblies that provide a fire rating equal to that of construction being penetrated and other ASTM Standards as applicable for the installation.
1. ASTM E84 "Test Method for Surface Burning Characteristics of Building Materials".
 2. ASTM E119 "Test Methods for Fire Tests of Building Construction and Materials".

- B. Requirements of Regulatory Agencies: Comply with the applicable requirements for fire separations and penetrations of the following:
 - 1. OBC: See Chapter 6, Table 601 and 602 for the time rated construction requirements.
 - 2. NFPA 70.
 - 3. NFPA 101.
- C. Installer: Specialist in the installation of type(s) of firestopping required; trained and approved by the firestop manufacturer.
 - 1. Shown to have successfully completed not less than 5 firestop projects similar in type and size to that of this Project.
- D. Provide firestopping products containing no detectable asbestos as determined by the method specified in 40 CFR Part 753, Subpart F, Appendix A, Section 1, "Polarized Light Microscopy".
- E. Do not use any product containing solvents that require hazardous waste disposal or which after curing dissolve in water.
- F. Coordinating Work: Coordinate construction of openings and penetrating items to ensure that designated through-penetration firestop systems are installed per specified requirements.

1.8 Delivery, Storage and Handling

- A. Deliver firestopping undamaged products to project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacturer; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multi-component materials.
 - 1. Comply with recommended procedures, precautions, or remedies described in material safety data sheets as applicable.
- B. Store and handle firestopping materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.
- C. Do not use damaged or expired materials.

1.9 Project Conditions

- A. Environmental Conditions: Do not install firestopping when ambient or substrate temperatures are outside limits permitted by firestopping manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Ventilation: Ventilate firestopping per firestopping manufacturers' instructions by natural means or, where this is inadequate, forced air circulation.

1.10 Sequencing and Scheduling

- A. Coordinate this Work as required with work of other trades. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.
- B. Do not cover up those firestopping installations that will become concealed behind other construction until Owner's inspection agency and authorities having jurisdiction, if required, have examined each installation.

PART 2 – PRODUCTS

2.1 Manufacturers

- A. Provide Products from one or more of the following manufacturers according to the suitability of the product for the intended purpose.
 - 1. W.R. GRACE (Flamesafe System)
 - 2. FYRESLEEVE INDUSTRIES
 - 3. TREMCO
 - 4. HILTI, INC.
 - 5. SPECIFIED TECHNOLOGIES (STI)
 - 6. 3M FIRE PROTECTION PRODUCTS
 - 7. THE RECTORSEAL CORPORATION (Metacaulk and Bio Fireshield).
 - 8. NELSON FIRESTOP PRODUCTS.

2.2 Materials - General

- A. As selected by Contractor. See SYSTEM PERFORMANCE REQUIREMENTS in Part 1 herein.
- B. Compatibility: Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by firestopping manufacturer based on testing and field experience.
 - 1. All materials shall comply with ASTM E814 or E 119 (UL 1429), and shall be manufactured of nontoxic, non-hazardous, asbestos free materials, and unaffected by water or moisture when cured.
 - 2. Primers: Conform to manufacturer's recommendations for primers required for various substrates and conditions.
 - 3. Backup Materials: Backup materials, supports, and anchoring devices shall be provided as required by UL testing.
 - 4. Provide all firestopping sealant materials within the VOC limits specified in Section 01 8113.
- C. Accessories: Provide components for each firestopping system that are needed to install fill materials and to comply with "System Performance Requirements" in Part 1. Use only components specified by the firestopping manufacturer and

approved by the qualified testing and inspecting agency for the designated fire resistance rated systems. Accessories include but are not limited to the following items:

1. Permanent forming/damming/backing materials must be noncombustible and may include the following:
 - a. Semi-refractory fiber (mineral wool) insulation.
 - b. Sealants used in combination with other forming/damming materials to prevent leakage of fill materials in liquid state.
 - c. Joint fillers for joint sealants.
2. Temporary forming materials.
3. Substrate primers.
4. Collars.
5. Steel sleeves.

2.3 Rated Stud Deflection Assembly

- A. Deflection Track Ceiling Runner: See Section 09 2116.
- B. Gypsum Wallboard: See Section 09 2116.
- C. Insulation: Mineral wool, 3.5 PCF minimum density.
- D. Firestopping Compound: Types as manufactured by listed manufacturers in 2.01A herein.
- E. Accessories: Provide all fasteners, clips and other related installation accessories as required for a complete UL approved assembly.

2.4 Mixing

- A. For those products requiring mixing before application, comply with through-penetration firestop system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 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.
 1. Verify Penetrations are properly sized and in suitable condition for application of materials.

3.2 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 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 in writing by through-penetration firestop system 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 through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop systems seal with substances.

3.3 Installing Through-Penetration Firestops

- A. General: comply with the "System Performance Requirements" in Part 1 and the through-penetration firestop manufacturer's installation instructions and drawings pertaining to products and applications indicated.
- B. Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position needed to produce the cross sectional shapes and depths required to achieve fire ratings of designated through-penetration firestop systems. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.
- C. Install fill materials for through-penetration firestop systems by proven techniques to produce the following results:
 - 1. Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 Installing Fire Resistive Joint Sealants

- A. General: Comply with the "System Performance Requirements" in Part 1 with ASTM C1193, and with the sealant manufacturer's installation instructions and drawings pertaining to products and applications indicated.
- B. Install joint fillers to provide support of sealants during application and at position required to produce the cross sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movements capability and develop fire resistance rating required.
- C. Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross sectional shapes and depths relative to joint width that optimum sealant movement capability. Install sealants at the same time joint fillers are installed.
- D. Tool non-sag sealants immediately after sealant application and prior to the time skinning or curing begins. Form smooth, uniform beads of configuration indicated or required to produce fire resistance rating as well as to eliminate air pockets, and to ensure contact and adhesion of sealants with sides of joint. Remove excess sealant from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

3.5 Identification

Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include the following information on labels:

1. The words "Warning – Through-Penetration Firestop System – Do Not Disturb. Notify Building Management of Any Damage".
2. Contractor's name, address, and phone number.
3. Through-penetration firestop system designation of applicable testing and inspecting agency.
4. Date of installation.
5. through-penetration firestop system manufacturer's name.

3.6 Cleaning

- A. Clean off excess fill materials and sealants adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of products in which opening and joints occur.

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- B. Provide final protection and maintain conditions during and after installation that ensure through-penetration firestop systems are without damage or deterioration at time of Contract Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce through-penetration firestop system complying with specified requirements.

END OF SECTION

SECTION 07 9005 – JOINT SEALERS

PART 1 - GENERAL

1.1 Section Includes

- A. This section includes joint sealers for the following locations:
 - 1. Interior joints in vertical surfaces and horizontal non-traffic surfaces as indicated below:
 - a. Perimeter joints between interior doorframes.
 - b. Perimeter joints of new millwork.
 - c. Other joints as indicated.

1.2 Related Requirements

- A. Administrative Requirements Ref: Section 01 3000.
- B. Firestopping – Ref: Section 07 8400.

1.3 Reference Standards

- A. ASTM C 834 – Standard Specification for Latex Sealants; 2010.
- B. ASTM C 1193 – Standard Guide for Use of Joint Sealants; 2009.
- C. BAAQMD 8-51 – Bay Area Air Quality management District Regulation 8, Rule 51, Adhesive and Sealant Products; www.baaqmd.gov; current edition.
- D. SCAQMD 1168 – South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

1.4 Performance Requirements

- A. Provide joint sealers that have been produced and installed to establish and maintain watertight and air tight continuous seals.
- B. Conformance with the requirements of this Section shall be demonstrated, where applicable, by submitting appropriate manufacturer's test reports, product technical data and certification letters.
- C. Sealed Joint Design
 - 1. Design and install joint widths to accommodate expected movements, without failure of joint sealant.
 - 2. In no case shall a sealed joint, susceptible to movement, be installed at less than ¼" (6mm).

3. Sealant and backer shall be installed of proper configuration to maximize compression/extension of sealant capacity and to minimize stress at bond line on substrates.
- D. Adhesion
 1. When tested in conformance to ASTM C794, joint sealant shall not fail in adhesion.
- E. Compatibility
 1. When test in conformance to ASTM C1087, sealants shall be shown to be compatible with project materials coming in contact with sealant such as backers, gaskets and setting blocks.
- F. Staining
 1. When tested in conformance to ASTM C1248, porous substrates shall show no permanent staining.

1.5 Submittals

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating sealant performance criteria, substrate preparation, limitations, and color availability.
- C. Color Samples:
 1. Submit samples of manufacturer's standard caulking material colors and special colors as indicated at least 30 days prior to commencement of application.
 2. Samples shall be actual materials. Owner reserves the right to reject work not in conformance with selected colors, based upon samples submitted.
 3. Should Contractor select a manufacturer meeting specified requirements, except for minimum color range requirements, he shall be responsible for furnishing special colors within color range requirements.

1.6 Quality Assurance

- A. Installer Qualifications: Installer shall be able to demonstrate not less than five (5) years of successful experience in the installation of comparable projects.
- B. Manufacturer shall be capable of providing the following:
 1. Field service representation during construction.
- C. Single Source Responsibility for Joint Sealer Materials: Obtain joint sealer materials from a single manufacturer for each different product required.

1.7 Delivery, Storage, and Handling

- A. Deliver materials to Project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time, batch number and mixing instructions for multi-component materials.
- B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.
- C. Provide Material Safety Data Sheet for each product.

1.8 Project Conditions

- A. Environmental Conditions: Do not proceed with installation of joint sealers under the following conditions.
 - 1. When the ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturers.
 - 2. When joint substrates are wet due to rain, frost, condensation, or other causes.
 - 3. All limitations as set by the manufacturer.

1.9 Warranty

- A. Manufacturer shall warrant for 5 years from date of substantial completion, that the installed sealants will perform as watertight weather-seals and will not change colors when used with back-up materials and substrates that have been approved for compatibility.
- B. Provide a written warranty in writing from both manufacturer and installer, agreeing to replace any or all joints failing within the warranty period at no cost to the owners, labor and material inclusive.
 - 1. Installer to provide a two (2) year warranty.
 - 2. Manufacturer to provide a five (5) year warranty.
- C. Warranty shall apply to both patent and latent defects.
- D. Responsibility of the Contractor/Installer during the two (2) year warranty period shall be repair or replace defective work. No cost of remedial work shall be borne by the Owner.

PART 2 – PRODUCTS

2.1 Manufacturers

- A. Acceptable Sealant Manufacturers:
1. Dow Corning Corporation
1255 Northmeadow Parkway, Suite 104
Roswell, GA 30076
(770) 751-7979
 2. Pecora Corporation
165 Wambold Road
Harleysville, PA 19438
(800) 523-6688
 3. Sonneborn, Division of ChemRex, Inc.
889 Valley Park Drive
Shakopee, MN 55379
(800) 433-9517
 4. Tremco
3735 Green Road
Beachwood, OH 44122
(800) 321-7906
 5. General Electric Company
260 Hudson River Road
Waterford, NY 12188
(800) 255-8886

2.2 Materials, General

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

2.3 Interior Joints: Latex Joint Sealants

- A. Acrylic-Emulsion Sealant: Manufacturer's standard, one part, non-sag, sealant complying with ASTM C 834, formulated to be paintable and recommended for exposed applications on interior and on protected exterior locations involving joint movement of not more than plus or minus 5%.
- B. Products: Subject to compliance with requirements, provide one of the following:
1. Acrylic-Emulsion Sealant:
 - a. "Chem-Calk 600"; Bostic Construction Products Div.
 - b. "AC-20"; Pecora Corp.

- c. "Sonolac"; Sonneborn Building Products Division, Rexnord Chemical Products, Inc.
- d. "Tremco Acrylic Latex 834"; Tremco Inc.

2.4 Miscellaneous Materials

- A. Primer: Provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from pre-construction joint sealer-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Provide non-staining, chemical cleaners of type which are acceptable to manufacturers of sealants and sealant backing materials, which are not harmful to substrates and adjacent nonporous materials, and which do not leave oily residues or otherwise have a detrimental effect on sealant adhesion or in-service performance.
 - 1. **DO NOT USE SOLVENTS THAT ARE HARMFUL TO PAINT FINISHES OR THE ALUMINUM WINDOW FRAME FINISHES.**
- C. Bond Breaker Tape: Provide non-staining, non-absorbent type polyethylene tape or other plastic tape compatible with joint sealants and to surfaces adjacent to joints.
- D. Accessory Materials for Fire-Stopping Sealants: Provide forming, joint fillers, packing and other accessory materials required for installation of fire-stopping sealants as applicable to installation conditions indicated.

PART 3 - EXECUTION

3.1 Examination

- A. Examine joints indicated to receive joint sealers, with Installer present, for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealer performance. Do not proceed with installation of joint sealers until unsatisfactory conditions have been corrected.

3.2 Preparation

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers and the following requirements.
 - 1. Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including dust; paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; old joint sealers; oil; grease; waterproofing; water repellents; water; surface dirt; and frost.
 - 2. Clean concrete, masonry, unglazed surfaces of ceramic tiles and similar 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

- sealers. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form release agents from concrete.
 2. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile; and other nonporous surfaces by chemical cleaners or other means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.
 3. Clean joint surfaces just prior to sealant installation to remove all laitance and surface dirt.
 - a. Non-porous substrates shall be cleaned with a solvent as recommended or acceptable by sealant manufacturer, and as required depending upon contaminants to be removed. Use "two-cloth" cleaning method as described herein.
 - b. Porous substrates shall be cleaned by dusting, or solvent, or both as dictated by field testing and as recommended or acceptable to sealant manufacturer. Abrasion cleaning may be required to remove surface treatments or coatings.
 6. "Two-Cloth" Cleaning Method
 - a. Use clean, soft, absorbent, lint-free cloths. This method consists of a solvent cloth wipe followed by a dry cloth wipe.
 - b. Thoroughly clean all surfaces of loose debris.
 - c. Pour or dispense acceptable cleaning solvent onto the cloth. A plastic squeeze bottle works best for organic cleaning solvents. Do not dip cloth into solvent container, as this will contaminate the cleaning agent.
 - d. Wipe vigorously to remove surface contaminants. Rotate the cloth to clean area before re-wiping.
 - e. Immediately wipe the cleaned area with a separate clean, dry cloth. Organic solvent must be removed with the dry cloth before the solvent evaporates.
- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealer manufacturer. Apply primer to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond, do not allow spillage or migration onto adjoining surfaces.
1. If primer is required per project substrate adhesion testing, mask adjacent surfaces where aesthetics is a consideration to keep excess primer or sealant off these surfaces.
 2. Apply primer (if required) to cleaned, dry substrates using a clean, dry cloth or brush. Do not apply too thick of coat. A white, powdery film will form if primer has been applied too thick. Remove excess primer with clean cloth.
 3. Allow primer to dry until all solvent is evaporated; this may take 5 to 30 minutes, depending on weather conditions.
 4. After inspecting for dryness, the joint is ready for backer and sealant installation. Sealant must be installed same day as joint preparation.
- C. Bond Breaker Tape: Use polyethylene tape or other plastic tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be

permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 Installation of Joint Sealers

- A. General: Comply with joint sealer manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply. Comply with the requirements of ASTM C1193 for proper sealant and backer installation.
- B. Solvent-Release-Curing Sealant Installation Standard: Comply with requirements of ASTM C 804 for use of solvent-release-curing sealants.
- C. Latex Sealant Installation Standard: Comply with requirements of ASTM C 790 for use of latex sealants.
- D. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
 - 1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - a. Do not leave gaps between ends of joint fillers.
 - b. Do not stretch, twist, puncture, or tear joint fillers.
 - c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
 - 2. Install bond breaker tape between sealants and joint fillers, or back of joints where adhesion of sealant to surfaces at back joints would result in sealant failure.
 - 3. Install proper diameter or size backer to depth in joint to develop a proper sealant bead configuration.
 - 4. If backers become wet due to exposure, remove and replace with dry material.
 - 5. Install bond breaker tape where required to prevent three-sided adhesion in moving joints.
- E. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.
 - 1. Completely fill voids in joints to ensure full adhesion and proper joint profile.
 - 2. Tool sealant concave, pushing sealant into void. Do not wet tooling aids as this may interfere with sealant cure and adhesion.
 - 3. Structural silicone applications require that the sealant be fully cured and adhered before the adhesive is stressed. Temporary support of substrates must be used during cure time. Follow written instructions by sealant

manufacturer for duration criteria of temporary support. Do not move shop sealed units until fully cured.

- F. Tooling of Non-sag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
 - 1. Provide concave joint configuration per Figure 6A in ASTM C 962, unless otherwise indicated.
- G. Installation of Fire-Stopping Sealant: Install sealant, including forming, packing and other accessory materials to fill openings around mechanical and electrical services penetrating floors and walls to provide fire-stops with fire resistance rating indicated for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.

3.4 Field Quality Control

- A. Do not allow excess sealant to contact adjacent surfaces if aesthetics is a consideration. However, should this occur, remove immediately by method of solvent, abrasion, or both as applicable. Solvents will not fully remove sealants or primers from porous surfaces.
- B. Remove masking tape before sealant cures.
- C. Dispose of all trash and solvent wipe rags in non-combustible containers.

3.5 Cleaning

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints occur.

3.6 Protection

- A. Protect joint sealers during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of substantial completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealers immediately and repair so that repaired areas are indistinguishable from original work.

END OF SECTION

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SECTION 08 1113 - STANDARD STEEL DOORS AND FRAMES

PART I - GENERAL

1.1 Section Includes

- A. Provide steel door frames, hollow metal doors, interior window frames, and other similar work as may be shown on the drawings, Door Schedule, and as specified.
 - 1. Interior doors with hardware as scheduled.
 - a. Provide fire rated doors as scheduled.
 - 2. Frames: Pressed steel frames for interior doors openings shall be of following type:
 - a. Interior Frames: Knock Down type units for clip anchorage to metal stud framing.
 - b. Fire rated door frames as scheduled.
 - 3. Accessories, fittings, anchors, spreaders, floor clips, cutouts and reinforcing hardware.
- B. Provide anchors, spreaders, floor clips, and similar items as required for a complete installation.
- C. Provide hardware preparation and reinforcement to accommodate specified hardware.

1.2 Related Requirements

- A. Finish Hardware - Ref: Section 08 7100.
- B. Painting primed doors and frames - Ref: Section 09 9000, "Painting".

1.3 Reference Standards

- A. Reference Standards: Wherever the following abbreviations are used herein, they shall refer to the corresponding standard.
 - 1. ANSI: American National Standards Institute.
 - 2. ASTM: American Society for Testing and Materials.
 - 3. SDI: Steel Door Institute.
 - 4. DHI: Door and Hardware Institute.
- B. ANSI/ICC A 117.1 – American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2011.
- C. ANSI A250.8 – SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 2003.
- D. ANSI A250.10 – Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 1998 (R2004).

- E. ASTM A 653/A 653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2009a.
- F. ASTM C 1363 – Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus; 2005.
- G. BHMA a156.115 – Hardware Preparation in Steel Doors and Steel Frames; 2006.
- H. DHI A115 Series – Specifications for Steel Doors and Frame Preparation for Hardware; Door and Hardware Institute; 2000 (ANSI/DHI A115 Series).
- I. NAAM HMMA 840 – Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; The National Association of Architectural Metal Manufacturers; 2007.
- J. NFPA 80 – Standard for Fire Doors and Other Opening Protectives; 2010.
- K. SDI-105 – Recommended Erection Instructions for Steel Frames.
- L. UL 10C – Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

1.4 Submittals

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Product data for each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, sound ratings, profiles, and finishes.
- C. Shop drawings showing fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
 - 1. Provide schedule of doors and frames using same reference numbers for details and openings as those on Contract Drawings.
- D. Label Construction Certification: For door assemblies required to be fire-rated and exceeding limitations of labeled assemblies, submit manufacturer's certification that each door and frame assembly has been constructed to conform to design, materials and construction equivalent to requirements for labeled construction.
 - 1. Preparation of fire door assemblies for all hardware, louvers and visions panels shall be in full compliance with NFPA 80, Fire Doors and Windows.

1.5 Quality Assurance

- A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications Standard Steel Doors and Frames" ANSI/SDI-100, 1991 Edition, and as specified.
 - 1. Materials and methods shall equal or exceed NAAM Standard HMMA-861 of the Hollow Metal Manufacturers Association entitled "Guide Specifications for Commercial Hollow Metal Doors and Frames" except as modified.
- B. Provide metal doors and frames fabricated by one manufacturer to ensure uniformity in appearance and construction.
- C. Fire rated doors and frames: Provide units that comply with NFPA 80, are identical to door and frame assemblies tested for fire-test-response characteristics per ASTM E152, and are labeled and tested by Factory Mutual (FM), Underwriters Laboratories (UL), or other National Recognized testing agency. Units shall bear testing agency labels.
 - 1. Provide UL labels permanently fastened on each door and frame which is within the size limitations established by NFPA and UL for labeling.
 - 2. Provide anchors for UL labeled frames required by the authority having jurisdiction
- D. Sound transmission class: Provide certificate that door assemblies have been tested in accordance with ASTM E413 and ASTM E1408 to achieve minimum sound transmission class (STC) specified.

1.6 Delivery, Storage, and Handling

- A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage.
- B. Inspect doors and frames 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 items as directed.
- C. Store doors and frames at building site under cover. Place units on minimum 4-inches high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4-inches spaces between individual stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.1 Manufacturers

- A. Manufacturer: Ceco Corp. Substitutions for architect approval may be submitted by:
 - 1. Amweld Building Products, Inc.
 - 2. Curries Company.
 - 3. Masker Company
 - 4. Pioneer Industries.
 - 5. Republic Builders products.
 - 6. Steelcraft Manufacturing Co.

2.2 Materials

- A. Hollow metal doors and frames shall be manufactured of commercial quality level, cold rolled steel, ASTM A366.
- B. Supports and Anchors: Fabricate of not less than 18-gage sheet steel; galvanized where used with galvanized frames.
- C. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where items are to be built into exterior walls, hot-dip galvanize in compliance with ASTM A 153, Class C or D as applicable.
- D. Shop Applied Primer Paint: Apply after fabrication.
 - 1. Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints complying with ANSI A224.1, "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames."

2.3 Doors and Frames

- A. Requirements for All Doors and Frames:
 - 1. Accessibility: Comply with ANSI/ICC A117.1.
 - 2. Door Texture: Smooth faces.
 - 3. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
 - 4. Hardware Preparation: In accordance with BHMA A156.115, with reinforcement welded in place, in addition to other requirements specified in door grade standard.
 - 5. Finish: Factory primed, for field finishing.
- B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior

doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.4 Steel Doors

- A. Interior Doors, Non-Fire-Rated:
 - 1. Grade: ANSI A250.8 Level 2, physical performance Level B, Model 2, seamless (18 gage). No visible seams permitted.
 - 2. Core: Polystyrene foam.
 - 3. Thickness: 1=3/4 inches.

- B. Interior Doors, Fire-Rated:
 - 1. Grade: ANSI A250.8 Level 2, physical performance Level B, Model 2, seamless (18 gage). No visible seams permitted.
 - 2. Fire Rating: As indicated on Door and Frame Schedule, tested in accordance with UL 10C ("positive pressure").
 - a. Attach fire rating label to each fire rated unit.
 - 3. Core: Honeycomb core, except that fire rated doors requiring temperature rise rating shall have mineral fiber core.
 - 4. Thickness: 1-3/4 inches.

2.5 Steel Frames

- A. General:
 - 1. Comply with the requirements of grade specified for corresponding door.
 - a. ANSI A250.8 Level 2 Doors: 16 gage frames.
 - 2. Finish: Same as for door.
 - 3. Frames in Masonry walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.

- B. Interior Door Frames, Non-Fire-Rated: Face welded type.

- C. Interior Door Frames, Fire-Rated: Face welded type.
 - 1. Fire Rating: Same as door, labeled.

2.6 Jamb Anchors

- A. Frames for installation in masonry walls shall be provided with adjustable jamb anchors of the type recommended by manufacturer for conditions shown. Anchors shall be not less than 16 gage steel or 0.0156 inch diameter steel wire. Stirrup straps shall be not less than 2 inch by 10 inch in size, corrugated and /or perforated. The number of anchors provided on each jamb, in addition to floor anchor, shall be as follows:
 - 1. Frames to 7'-6" height: 3 anchors
 - 2. Frames 7'-6" to 8'-0" height: 4 anchors
 - 3. Frames over 8'-0" height: 1 anchor for each 2 feet or fraction thereof.

- B. Frames for installation in stud partitions shall be provided with steel anchors of suitable design, not less than 18 gage thickness, securely welded inside each jamb as follows:
 - 1. Frames to 7'-6" height: 4 anchors
 - 2. Frames 7'-6" to 8'-0" height: 5 anchors
 - 3. Frames over 8'-0" height: 1 anchor for each 2 feet or fraction thereof.
- C. Frames to be anchored to previously placed concrete, masonry or structural steel shall be provided with anchors of suitable design.
- D. Frames for installation in masonry wall openings more than 4 feet in width shall have angle or channel stiffener factory welded into the head. Such stiffeners shall be not less than 12 gage steel and not longer than the opening width, and shall not be used as lintels or load bearing members.
- E. Dust cover boxes (or mortar guards) of not thinner than 26 gage steel shall be provided at all hardware mortises on frames to be set in masonry or plaster partitions.
- F. All frames shall be provided with a steel spreader temporarily attached to the feet of both jambs to serve as a brace during shipping and handling. The steel spreader is not to be used for installation purposes.
- G. Loose glazing stops shall be of cold-rolled steel, not less than 20 gage thickness, butted at the corners joints and secured to the frame with cadmium plated screws.
- H. Frame Reinforcement shall be as follows:
 - 1. Hinge and pivot reinforcements: 7 gage, 1-1/2 foot by 10 inch min.
 - 2. Strike reinforcements: 12 gage
 - 3. Flush bolt reinforcements: 12 gage
 - 4. Closer reinforcements: 12 gage
 - 5. Surface-mounted hardware: 12 gage
 - 6. Hold-open arms: 12 gage
 - 7. Surface panic devices: 12 gage
 - 8. Provide closer reinforcement in all frames, whether or not closers are listed in the hardware schedule.
- I. Floor Anchors:
 - 1. Floor anchors shall be securely welded to inside each jamb, with two holes provided at each jamb for floor anchorage.
 - 2. Where required, adjustable floor anchors, providing not less than 2 inches height adjustment shall be provided.
 - 3. Minimum thickness of floor anchors shall be 14 gage.

2.7 Accessories

- A. Louvers: Roll formed steel with overlapping frame; finish same as door components; factory-installed.

- B. Glazing: As specified in Section 08 8000, factory installed.
- C. Removable Stops: Formed sheet steel, mitered corners; prepared for countersink style tamperproof screws.
- D. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.
- E. Temporary Frame Spreaders: Provide for all factory-or shop-assembled frames.

2.8 Fabrication

- A. Fabricate steel door units to be rigid, neat in appearance and free from defects, warp or buckle. Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at project site. Comply with ANSI/SDI-100 requirements as follows:
 - 1. Interior doors: Face sheets shall not be less than 18 gage.
 - 2. Clearances: Not more than 1/8 inch at jambs and heads except between non-fire-rated pairs of doors not more than 1/4 inch. Not more than 3/4 inch at bottom.
 - 3. Edge profiles shall be provided on both vertical edges of door as follows:
 - a. Single acting swing doors: beveled 1/8 inch in 2 inches.
 - b. Double acting swing doors: rounded on 2-1/8 inches radius.
- B. Doors shall be made of commercial quality, level, cold rolled steel conforming to ASTM A366. Steel face shall have smooth finish. Faces shall be joined at their vertical edges by a continuous weld extending the full height of the door. All such welds shall be ground filled and dressed smooth to make them invisible and provide a smooth flush surface.
- C. Tolerances: Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware, (including all function holes for locksets and exit devices), in accordance with final Door Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 Series Specifications for door and frame preparation for hardware. Hardware preparation, except for surface mounted items, shall be done in the factory.
- E. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at project site except as indicated otherwise.
 - 1. Hinge and pivot reinforcement: 7 gage.
 - 2. Reinforcement for lock face, flush bolts, concealed or surface-mounted closers: 12 gage.
 - 3. Reinforcement for all other surface mounted hardware: 16 gage.

- F. Locate hardware as indicated on final shop drawings or, if not indicated, in accordance with "Recommended Locations for builder's Hardware on Standard Steel Doors and Frames," published by Door and Hardware Institute. The location of hardware on doors and frames shall be as follows:
1. Top hinge: 5 inches from head of the frame to top of hinge.
 2. Bottom hinge: 10 inches from finished floor to bottom of hinge.
 3. Intermediate hinge: centered between top and bottom hinges.
 4. Dutch Doors: 5 inches from head of frame to top hinge; 10 inches from finished floor to bottom of bottom hinge; 5 hinges from split line to top and bottom of lower and upper intermediate hinges.
 5. Unit and integral type locks and latches: 38 inches to centerline of knob.
 6. Deadlocks: 60 inches to centerline of cylinder.
 7. Panic hardware: 38 inches to centerline of crossbar.
 8. Door pulls: 42 inches to centerline of grip.
 9. Push-pull bars: 42 inches to centerline of bar.
 10. Arm pulls: 47 inches to centerline.
 11. Push plates: 48 inches to centerline of plate.
- G. Shop Painting: Clean, treat, and pre-paint exposed surfaces of steel door and frame units, including galvanized surfaces.
1. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.
 2. Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint in field.

PART 3 - EXECUTION

3.1 Installation

- A. General: Install standard steel doors, frames, and accessories in accordance with final shop drawings, manufacturer's data, and as specified.
- B. Placing Frames: Comply with provisions of SDI-105 "Recommended Erection Instructions for Steel Frames," unless otherwise indicated.
1. Place frames before construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set and frames will retain proper position during construction. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
 2. Frames for openings over 4 feet wide shall have a vertical brace placed at the center to support frame head during installation until grouting has cured.
 3. In masonry construction, locate 3 wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry Tee anchors.
 - a. Frame anchors in masonry walls shall be embedded in mortar and frames grout filled as walls are built.

4. Install fire-rated frames in accordance with NFPA Standard No. 80.
 5. In metal stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In closed steel stud partitions, attach wall anchors to studs with screws. Fasten floor anchors to concrete floors using expansion bolts or power actuated drive pins.
 6. Install rubber silencers prior to grouting or make provision to enable their installation following grouting. Protect rubber silencers from damage and replace damaged units.
- C. Door Installation: Fit hollow metal doors accurately in frames using stainless steel shims, within clearances specified in ANSI/SDI-100-91.
1. Install fire-rated doors with clearances as specified in NFPA Standard No. 80.
 2. Exterior Doors without threshold: Maximum 1/4 inch clearance to bottom of door from sill.
- D. All hardware except hinges shall be installed after field painting.

3.2 Adjust and Clean

- A. Prime Coat Touch-up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- B. Protection Removal: Immediately prior to final inspection, remove protective plastic wrappings from doors.
- C. Final Adjustments: Check and readjust operating hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition. Upon completion of installation, each door shall operate smoothly and easily. Doors with closers shall latch under power of closer.

END OF SECTION

SECTION 08 3113 – ACCESS DOORS

PART I - GENERAL

1.1 Section Includes

- A. Provide and install access panels at the existing masonry wall opening located on the north wall of the existing Electrical Room.

1.2 Related Requirements

- A. Gypsum Board Assemblies – Ref: Section 09 2116.

1.3 Submittals

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Submit for approval shop drawings, product data.
- C. Install fire-rated units to comply with fire resistance rating required. Coordinate installation and field finishing with other trades.
- D. Adjust hardware and operation. Replace damaged units.

PART 2 - PRODUCTS

2.1 Materials

- A. Larsen's Manufacturing Company or approved equal.
 - 1. Provide flush mount, fire-rated access doors for gypsum finishes:
 - a. Larsen's L-MPG with a 16 gauge door and 16 gauge frame.

PART 3 - EXECUTION

3.1 General

- A. Install per manufacturers recommended installation requirements.

END OF SECTION

SECTION 08 7100 - FINISH HARDWARE

PART 1 - GENERAL

1.1 Section Includes

- A. Definition: "Finish Hardware" includes items known commercially as finish hardware which are required for swing, sliding and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame.
 - 1. Door Hardware is scheduled on the drawings.
- B. Provide labor, materials, transportation, services and appliances necessary to complete the following work:
 - 1. Finish door hardware installation including necessary screws, bolts, special fasteners, expansion shield and other devices necessary and required for proper hardware application and use.
 - 2. Furnish and install cylinders and latches at exterior storefront entrance as indicated. Coordinate keying with other locksets.
 - 3. Provide temporary locksets at exterior doors during construction.

1.2 Related Sections

- A. Rough Carpentry – Ref: Section 06 1000.
- B. Standard Steel Doors and Frames - Ref: Section 08 1113.
- C. Painting - Ref: Section 09 9000

1.3 Reference Standards

- A. Finish hardware in this section shall meet the following standards as established by and the standard latest revision will be effect:
 - 1. The Door and Hardware Institute (DHI) Various Publications
 - 2. American National Standards (ANSI)/Builders Hardware Manufacturer Association (BMHA)
 - 3. National Fire Prevention Association (NFPA)
 - a. NFPA 80 Standard for Fire Doors and Fire Windows
 - b. NFPA 101 Life Safety Code
 - c. NFPA 105 Smoke and Draft Control Door Assemblies
 - 4. CABO/ANSI A117.1 Accessible and Usage Buildings and Facilities
 - 5. Underwriters Laboratories (UL)
 - a. UL 10C – Fire Tests of Door Assemblies
 - b. UL 305 – Panic Hardware
 - 6. Applicable State and Local Building Codes
 - 7. American Disabilities Act (ADA) – 1990 Civil Law

1.4 Submittals

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Schedules: The finish hardware supplier shall, upon award of the contract, furnish four (4) copies of a completely detailed schedule of finish hardware in the Door and Hardware Institute's Sequence and Format for approval within 30 days. Hardware schedule to be complete with Title page, Door Index/Keying Schedule and Manufactures legend. After "Approval" provide six (6) copies, unless otherwise requested, of the corrected, revised and approved schedule for field use, distribution and files. Provide one (1) copy complete with Catalog Cuts, marked "Installers Copy" and deliver it to the job site.
- C. Product Data: Provide a catalog cut, clearly marked and identified, illustrating and describing each product included in the hardware schedule. Formulate these catalog cuts into sets and include a set with each copy of the hardware schedule submitted.
- D. Samples: If so requested by the Architect, provide a sample of any product or item requested, properly marked and tagged, for the opening for which it is intended. After examination and approval by the Architect, the sample shall be turned over to the General Contractor, for incorporation into the project.
- E. Templates: Upon "Approved" copies of the hardware schedule, provide a complete "Template List". Further and upon request, provide copies to manufacturers or trades, whose work includes preparation of their products, to receive hardware. Provide copies of all such transmittals to the contractor, for their files. If physical samples are required, the manufacturer may request it from the general contractor and assume all responsibility of shipping it complete to the project.
- F. Keying: The hardware supplier shall meet with owner and/or architect to establish keying requirements. Provide a keying schedule, listing the levels of keying, (GMKD, MKD, Keyed alike, etc.) as well as an explanation of the key's function, the symbols used and the numbers of the doors controlled. This shall be provided in reference to the Door and Hardware Institute's manual "Keying Systems and Nomenclature" . Also in conjunction the Door Index/Keying Schedule (which lists the door number, schedule heading, lock type and individual key symbol and remarks or special instructions) mentioned in paragraph "B", Schedules.
- G. Wiring Diagrams: Unless otherwise specifically stated, for any electrified hardware furnished on this project, provide complete point to point wiring diagrams along with riser drawings and elevations, showing locations where such material is to be installed. Also check with the system installer as to the scope of their work.

- H. Operations and Maintenance Data: At the completion of the project, provide an Owner's Operation and Maintenance Manual. The manual shall consist of a hard three ring binder. Include a copy of the latest revised and updated schedule of finish hardware, complete with catalog cuts and keying schedule. In addition, furnish one copy of maintenance and parts manual, for those items, for which they are readily available and normally provided.

1.5 Administrative Requirements

- A. Coordinate the manufacture, fabrication, and installation of products onto which door hardware will be installed.
- B. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

1.6 Intent

- A. This specification contemplates providing proper hardware, in accord with applicable codes for all doors as listed. Finish hardware contractor's responsibility is to examine plans and specifications and call out conflicts, omissions or obvious requirements not listed to the attention of the General Contractor or Architect for instructions.
 - 1. The hardware supplier shall furnish all finish hardware required for the Work and furnished under another section. Where specific hardware is not indicated, provide the same hardware required for similar doors and function elsewhere in the building.

1.7 Quality Assurance

- A. Substitutions: The manufacturers and catalog numbers listed hereinafter are intended to establish a standard of quality. Items specified as "owners standard" shall be provided as listed they have been requested by the Owner/Architect to match existing for continuity and/or future performance, maintenance standards or there is no equal product. Certain products have been selected for their unique characteristics and particular project suitability. Requests for substitutions will require architects approval and must be made in writing ten (10) days prior to bid date. If proposing a substitute, submit that product data and specified item product data indicate basis for substitution and any savings. Provide sample if requested. Substitution item will be reviewed and if approved it will be listed in an addendum prior to bid date.
- B. Supplier Qualification: The hardware supplier must be engaged currently in the furnishing, delivery and servicing of contract builders hardware. The firm shall have been furnishing hardware on similar projects in the vicinity for not less than two (2) years. The supplier must employ a certified Architectural Hardware Consultant (AHC) or a person with equivalent qualifications to be available at reasonable times during the course of this project for consultation with the owner, architect and general contractor.

- C. Single Source Responsibility: Obtain each type of hardware (latches and locks, hinges, closer, etc.) from a single manufacturer
- D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by Underwriters Laboratories, Warnock Hersey, Factory Mutual, or other testing and inspecting organization for given type/size and degree of label. Provide proper latching hardware, door closers, approved bearing hinges and seals whether listed in the hardware schedule or not. All hardware shall comply with standards UBC702 (1997) and UL10C. These must be acceptable to the authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and frame labels.
 - 1. Where emergency exit devices are required on fire rated doors, (with supplementary marking on door' UL labels indicating "Fire Doors to be equipped with Fire Exit Hardware") provide UL label on exit devices indicating, "Fire Exit Hardware".

1.8 Product Handling

- A. Marking and packaging: All items of hardware shall be delivered to the job site, in the manufacturer's original packages, they shall be marked to correspond with approved hardware schedule, item number, heading number, door number and key sets symbols. Include installation instructions with each piece of hardware.
- B. Delivery: The hardware supplier shall coordinate delivery with general contractor, in order to compile a mutually beneficial delivery schedule, which imposes no hardship on either party. Some items of the hardware may be delivered to fabricators for factory installation in such case, the general contractor shall be advised of such shipments, along with copies of shipping tickets and any other documentation, thus transferring responsibility to the manufacturer or fabricator, for care of said hardware. Any delivery fees will be in the quoted price of the material.
- C. Storage: Hardware is to be delivered to the job site and stored in a clean dry, secure area, with adequate strong shelving. If requested by the contractor, the hardware supplier shall send a representative to the job site to "assist" the check in and laying-out of the hardware on the shelves. A representative of the contractor MUST be present. At this time any installation tips or special instructions will be reviewed.
- D. No direct shipments will be allowed unless prior approval by the contractor.

1.9 Warranty

- A. Starting date for all warranty periods will be from the date of substantial completion.

- B. All material must carry a limited warranty against defects in workmanship and materials from the date of acceptance of the project as follows.
 - 1. Door Closers: at least ten (30) year warranty, except electronic closers, two (2) years
 - 2. Exit Devices: at least three (3) year warranty, except electrified devices, one (1) year.
 - 3. Hinges: life of the building.
 - 4. Balance of the hardware: one (1) year.
- C. Products judged to be defective during the warranty period will be replaced or repaired in accordance with the manufacturer's warranty at no additional cost to the owner. However, NO warranty against defects due to improper installation or failure to exercise normal maintenance.

1.10 Maintenance

- A. Maintenance service: If there are any products listed hereinafter that normally require a maintenance or service contract, provide the owner with details and costs of said contract.
- B. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for the owners continued adjustment, maintenance, and removal and the replacement of door hardware.

PART 2 - PRODUCTS

2.1 Materials and Fabrication

- A. Screws and Fasteners: Provide all screws and fasteners of the proper size and type to properly anchor or attach the item of hardware they are intended for. Provide all fasteners with Phillips head, do not use through-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely.
- B. Hinges: The following is a guide for hinge type required for this specification:
 - 1. 1-3/4" thick doors up to and including 3'0" wide:
 - 2. Exterior: standard (.134) or heavy weight (.180) ball bearing, bronze/stainless steel 4-1/2" high.
 - 3. Interior: standard (.134) or heavy weight (.180) plain or ball bearing, steel 4-1/2" high.
 - 4. Furnish one pair of hinges for all doors up to 60" high. Furnish one additional hinge for every additional 30" or fraction thereof. The width of hinges shall be sufficient to clear all trim.
 - 5. Hinges specified Ives (IVE), approved acceptable substitute Hager, Stanley.
- C. Mortise Locks:

1. Locks shall be ANSI A156.13, Grade 1 mortise locksets, Manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance.
2. Locks to have a standard 2-3/4" backset with a full 3/4" throw stainless steel mechanical anti-friction latch bolt. Deadbolt shall be a full 1" throw, constructed of stainless steel.
3. Lever trim shall be cast or forged in the design specified, with 2-1/8" diameter roses. Levers to be thru-bolted to assure proper alignment. Trim shall be applied by threaded bushing "no exposed screws".
4. Locks meeting this specification: Schlage L9000 series with 06N trim. No Substitution.

D. Door Closers:

1. All closers will utilize a stable fluid withstanding temperature range of 120 degrees f to -30 degrees f without seasonal adjustment of closer speed to properly close the door. Closers on fire rated doors will be provided with temperature stabilizing fluid that complies with standard UL 10C for "Positive Pressure Fire Tests of Door Assemblies" and UBC 7-2 (1997).
2. Door closers shall hydraulic, full rack and pinion action with a high strength cast iron cylinder. Cylinder body shall be 1 1/2" in diameter, and double heat-treated pinion shall be 11/16" in diameter. A written certificate showing successful completion of a minimum of 10,000,000 cycles for exterior door closers must be provided.
3. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force for the physically handicapped. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed, and back check.
4. All closer shall have forged steel main arms and forged forearms for parallel arm closers.
5. Closer cylinders and arms (and metal covers when specified) shall have a power coating finish which has been certified to exceed 100 hours of slat spray testing by ETL, an independent testing laboratory used by BHMA for ANSI certification. For metal components that can't be power coated, a special rust inhibiting finish (SRI) must be used.
6. All closers will not be seen on the public side or hallway side of the door. The appropriate drop plate or mounting plates will be used as conditions dictate.
7. Door closers meeting this specification: LCN (LCN) 4040XP series, approved acceptable substitute Sargent 350 series, Stanley D4550 series.

E. Door Stops and Holders:

It shall be the responsibility of the hardware supplier to provide doorstops for all doors in accordance with following requirements:

1. Wall stops may be used wherever possible.
2. Where wall stops cannot be used, provide dome type floor stops of the proper height.

3. At any opening where a wall or floor stop cannot be used, a heavy-duty overhead stop will be required.
4. At no time will a hinge pin stop be acceptable.
5. Stops specified Ives (IVE), approved acceptable substitute Hager, Rockwood

F. Silencers:

Furnish Ives SR64 for the "push in type: for metal frames, Ives SR65 for wood frames, or Ives SR66 adhesive type. Supply 3 each for single doors, 2 each for pair of doors. Omit silencers where gasketing is scheduled.

1. Silencers specified Ives (IVE), approved acceptable substitute Hager, Rockwood

2.2 Manufacturers

- A. The following manufacturers have been selected for this project, whose products numbers have been used in the preparation for this specification.
- B. Note that even though an acceptable substitute manufacturer may be listed, the product must provide all the functions and features of the specified product or it will not be approved.
- C. Hand of Door: Drawings show direction of slide, swing, or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.
- D. Where the exact types of hardware specified are not adaptable to the finished shape or size of the members requiring hardware, furnish suitable types having as nearly as possible the same operation and quality as the type specified, subject to Architect's approval.

2.3 Finishes

All hardware is to be furnished in one of the following finishes, depending upon the item and its base metal. All satin chrome or satin stainless steel or as noted.

<u>Item</u>	<u>BHMA #</u>	<u>US #</u>
Hinges exterior	630	(US32D)
Hinges interior	652	(US26D)
Flush Bolts	626	(US26D)
Coordinators	628	(US28)
Mounting Brackets	628	(US28)
Locks	626	(US26D)
Exit Devices	626	(US26D)
Door Closers	689	(alum painted)
Plates	630	(US32D)
Door wall stops	626	(US26D)
Door floor stops	626	(US26D)
Overhead Holders	630	(US32D)

Other items to be 630 if available. If not, 626 over brass or bronze.

2.4 Lock Cylinders and Keying

- A. General: Supplier will meet with Tenant Representative to finalize keying and obtain final instructions in writing.
- B. Keying: Provide a master-keyed system with keying arrangements as scheduled. Provide three (3) master keys and three (3) keys per lock clearly labeled with location of lockset they operate.
- C. All locksets shall be furnished with three (3) cut keys and with key code number stamped on the bow of the key. All cylinders shall be factory master keyed and grand master keyed as required. Certain locks shall be construction master keyed. Furnish ten (10) construction master keys to the general contractor. Furnish three (3) grand master keys and six (6) master keys for each master keyed group. The grand master keys and master keys shall be sent direct to the owner's representative by registered mail, return receipt requested.
- D. Consult with architect and/or owners representative and secure written approval of the complete keying layout prior to placing lock order with factory.
 - 1. Cylinders and Keying specified Schlage, No substitution
 - 2. Key cylinder as directed by Owner Representative.

2.5 Miscellaneous Provisions

- A. Silencers: Provide three (3) silencers per door unless otherwise specified.
- B. Provide one pair of flush bolt at inactive leaf of all double doors.
- C. Provide a wall stop at each door unless a floor stop is required.
- D. No stick on adhered weather-stripping will be accepted.

PART 3 - EXECUTION

3.1 Installation

- A. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and as may be otherwise directed by Architect.
- B. Install each hardware item in compliance with the manufacturer's instruction and recommendations using fully experienced and qualified personnel. Wherever cutting and fitting is required to install hardware onto or into surfaces which are

later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protection with finishing work specified in Division 9 sections. Do not install surface-mounted items until finishes have been completed on the substrate.

- C. Coordinate with door and frame suppliers to obtain door frame hardware installations which are listed by approved testing agency.
- D. Set units level, plumb and true to line location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- E. All surface mounted closers to be mounted on the room side of doors in all corridors, lobbies and other public spaces.

3.2 Field Quality Control

- A. After all hardware has been installed, provide the services of a qualified hardware consultant to check for proper installation of hardware, according to the "Approved" hardware and keying schedule's. Also, check the operation and adjustment of all hardware items in accordance with the manufacturer's recommendations.

3.3 Adjust and Clean

- A. Adjust and check each operating item of hardware and each door, to ensure proper operation of function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.
 - 1. Upon completion, door shall latch without forcing and close latch under the force of the closer.
 - 2. Provide door control equipment as required. Mount equipment so as to permit maximum door opening, but to prevent contact of the door with building construction and equipment.
- B. Remove all hardware from doors prior to painting.
- C. Clean adjacent surfaces soiled by hardware installation.
- D. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the areas during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore function and finish of hardware and doors. Adjust door devices to compensate for final operation of heating and ventilating equipment.
- E. Instruct Owner's personnel in proper adjustment and maintenance of hardware and hardware finishes, during the final adjustments.

Circulation Department Alterations
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FAA Project No: 17174.00

3.4 Protection

- A. Provide protection for all items of hardware during construction, to prevent damage, field painting or marring. Damaged or disfigured hardware shall be replaced or corrected by the responsible party.

3.5 Hardware Schedule

- A. Provide hardware for each door to comply with requirements as noted on the drawings.

END OF SECTION

Division 9

Finishes

Circulation Department Alterations Columbus Metropolitan Library

96 South Grant Avenue
Columbus, Ohio 43215

Ford & Associates Architects

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SECTION 09 2116 - GYPSUM DRYWALL

PART I -GENERAL

1.1 Section Includes

- A. Extent of each type of gypsum drywall construction required is indicated on Drawings. This Section includes the following types of gypsum board construction:
 - 1. Steel framing members to receive gypsum board.
 - 2. Gypsum board screw-attached to steel framing and furring members.
 - 3. Accessories and finishing materials.

1.2 Related Requirements

- A. Rough Carpentry – Ref: Section 06 1000.
- B. Fire Stopping - Ref: Section 07 8400.
- C. Joint Sealers - Ref: Section 07 9005.
- D. Standard Steel Doors and Frames - Ref: Section 08 1113.
- E. Painting - Ref: Section 09 9000.

1.3 Reference Standards

- A. ASTM C 475/C 475M – Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).
- B. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2009a.
- C. ASTM C 840 – Standard Specification for Application and Finishing of Gypsum Board; 2008.
- D. ASTM C 1002 – Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.
- E. ASTM C 1047 – Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2009.
- F. ASTM C 1177/C 1177M – Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2008.
- G. ASTM C 1280 – Standard Specification for Application of Gypsum Sheathing; 2009.

- H. ASTM C 1396/C 1396M – Standard Specification for Gypsum Board; 2009a.
- I. GA-216 – Application and Finishing of Gypsum Board; Gypsum Association; 2007.

1.4 Submittals

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Product data from manufacturers for each type of product specified.
- C. Product test reports indicating compliance of gypsum board with fire resistance, structural performance, and moisture resistance performance requirements.
- D. Product Data: Provide data on gypsum board, accessories, and joint finishing system.

1.5 Quality Assurance

- A. Installer Qualifications: Company specializing in performing gypsum board application and finishing, with minimum three years of documented experience.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
- C. Gypsum materials and installation to comply with the following Gypsum Association publications:
 - 1. GA-214, Recommended Levels of Gypsum Board Finish.
 - 2. GA-216, Application and Finishing of Gypsum Board.
 - 3. GA-226, Application of Gypsum Board to Curved Surfaces.
 - 4. GA-235, Gypsum Board Typical Mechanical and Physical Properties.
 - 5. GA-801, Handling Gypsum Board.
- D. Fire-Resistance Ratings: Where indicated, provide materials and construction which are identical to those of assemblies whose fire resistance rating have been determined per ASTM E 119 by a testing and inspecting organization acceptable to authorities having jurisdiction.
 - 1. Provide fire-resistance rated assemblies identical to those indicated by reference to GA File No's. in GA-600 "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory" or in listing of other testing and agencies acceptable to authorities having jurisdiction.
- E. Single Source Responsibility: Obtain each type of gypsum board and related joint treatment materials from a single manufacturer.

- F. Gypsum Board Systems: Comply with ASTM C840 "Application and Finishing of Gypsum Board", and as specified.
- G. Metal Framing System: Comply with ASTM C754 "Installation of Steel Framing Members to Receive Screw Attached Gypsum", and as specified.
- H. Reference Standards: Wherever the following abbreviations are used herein they shall refer to the corresponding standard:
 - 1. ASTM: American Society for Testing and Materials.
 - 2. GA: Gypsum Association.
- I. Fire-Rated Construction: Comply with fire resistance ratings indicated on drawings and as required by governing authorities and codes. Provide materials, accessories and application procedures that have been listed by Underwriters Laboratories or tested in accordance with ASTM E119 for the type of construction shown.
- J. Guarantee: Submit written guarantee stating that cracks, delaminations or other imperfections in the drywall work which may develop within a period of two (2) years from date of acceptance will be repaired at no cost to the Owner.

1.6 Delivery, Storage and Handling

- 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 gypsum boards to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.7 Project Conditions

- A. Environmental Conditions, General: Establish and maintain environmental conditions for application and finishing gypsum board to comply with 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 degrees F. For adhesive attachment and finishing of gypsum board maintain not less than 50 degrees F for 48 hours before application and continuously thereafter until drying is complete.
- C. Ventilate building spaces to remove water not required for drying joint treatment materials. Avoid weather to prevent materials from drying too quickly.

PART 2 - PRODUCTS

2.1 Manufacturers

- A. Steel Framing and Furring: Subject to compliance with requirements, provide products of one of the following:
 - 1. ClarkDietrich Building Systems.
 - 2. Approved Equal.

- B. Gypsum Boards and Related products: Interior and exterior gypsum board and accessories by United States Gypsum (USG) form the basis-of-design. Products with comparable material characteristics, ratings, and finishes by listed manufacturers are also acceptable.
 - 1. American Gypsum Co.
 - 2. BPB America Inc.
 - 3. G-P Gypsum.
 - 4. Lafarge North America Inc.
 - 5. National Gypsum Company.
 - 6. Temple.
 - 7. QuietRock

2.2 Components

- A. Non-structural Studs: Cold-formed galvanized steel C-studs, ClarkDietrich ProSTUD™ drywall studs, in conformance with ASTM C-754 for conditions indicated below:
 - 1. Flange Length: 1 1/4 inch (32mm) 125 flange.
 - 2. Web Depth: As indicated on drawings.
 - 3. Members that can show independently verified test performance that meets the limiting height values listed in C 754 (need not meet the minimum thickness set forth in 4.3 or the minimum section properties set forth in 8.1).

- B. Non-structural Track: Cold-Formed galvanized steel runner tracks, ClarkDietrich ProSTUD™ drywall runner track, in conformance with ASTM C-754 for conditions indicated below:
 - 1. Flange Length: 1 1/4 inch (32 mm) T125 flange.
 - 2. Web Depth: Track web to match stud web size.
 - 3. Minimum Material Thickness: Track thickness to match wall stud thickness.

2.3 Steel Framing For Walls and Partitions

- A. Steel Studs and Runners: ASTM C 645, with flange edges of studs bent back 90 deg. and doubled over to form 3/16 inch minimum lip (return) and complying with the following requirements for minimum thickness of base (uncoated) metal and for depth.
 - 1. Deflection criteria: L/240 span.

- B. Steel Rigid Furring Channels: ASTM C 645, Hat-shaped, 25 gage, 7/8 inch deep. Install vertically.
- C. Fasteners: Type, material, size, corrosion resistance, holding power and other properties required to fasten steel framing and furring members securely to substrates involved; complying with gypsum drywall manufacturer's recommendations for applications indicated.
- D. Deflection Track: ASTM A-653, galvanized steel sheet deep leg track, provide: SLP-TRK" by Sliptrack Systems, Inc., "Deep Leg Track w/Slip Clip" by Fire Trak Corp., "Deflection Track" by Marino/Ware® or "VertiClip SLD" series by Steel Network, Inc.

2.4 Interior Gypsum Board Materials

- A. General: Materials complying with ASTM C 36 or ASTM C 1396, as applicable to type of gypsum board indicated and whichever is more stringent.
- B. Panel Size, General: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated. Thicknesses indicated.
- C. Gypsum Wallboard: ASTM C 36, with long edges tapered. Provide thickness indicated.
 - 1. Regular Type: "SHEETROCK Brand Gypsum Panels", at interior non-rated partitions and soffits.
 - 2. Fire-Rated Panels: "SHEETROCK Firecode (Type X) and Firecode C Cores Panels" at interior rated partitions, soffits, and ceilings.
 - 3. Water-resistant Panels: ASTM C 630, "Fiberock Brand Aqua-Tough Panels", at interior janitor room walls, restroom "wet" walls, and walls to receive ceramic tile. Provide Type X fire-resistant type where required to meet rated assembly requirements.
 - 4. Mold Resistant Panels: "SHEETROCK Brand HUMITEK Gypsum Panels", with moisture and mold-resistant gypsum core encased in moisture resistant papers, at all interior surfaces of exterior walls.
 - 5. Cement Backer Board: "DUROCK Cement Board" at walls to receive ceramic tile.
 - a. Materials: Aggregated Portland cement with woven glass fiber mesh facing complying with ANSI A118.9.
 - 6. Interior Ceiling Panels: "SHEETROCK Brand Interior Gypsum Ceiling Board", ½" thick at non-rated ceilings.
 - 7. Water-Resistant Backing Board (WR): ATM C 1396, regular types unless noted otherwise. Provide Type X for fire-resistant rated assemblies.
 - a. Thickness: 5/8" minimum.
 - b. Edges: Tapered.

8. Acoustical Gypsum Board: Quietrock EZ-SNAP Moisture Resistant Type X. 5/8" thick. ASTM C1396, Federal Specification SS-L-30D Type III & Grade X. Product Standards: ASTM C1766.

2.5 Interior Trim Accessories

- A. Metal Trim Accessories: ASTM C 1047, galvanized steel. Exposed and plastic trim not permitted. Comparable products by metal framing manufacturer are also acceptable.
 1. Provide sizes to match gypsum panel thickness at installation conditions.
 2. Corner bead: "DUR-A-BEAD Corner Bead" No. 103, all-metal, galvanized steel reinforcement with 1 ¼" x 1 ¼" flange width. Use at standard 90 degree outside corners unless otherwise indicated.
 3. J-Bead: No 200-A, J-shaped galvanized steel casing.
 4. L-Bead: No. 200-B, L-shaped galvanized steel casing.
 5. Expansion (Control) Joint: "Zinc Control Joint No. 093", roll-formed zinc with tape-protected opening ¼" wide x 7/16" deep.
 6. Flexible Corner Trim: "SHEETROCK Brand Flex Metal Tape (Flex Tape)" with two 7/16" wide galvanized rust-resistant steel strips with 1/16" gap between the strips. Form to fit inside or outside angles greater or less than 90 degrees. Provide width to suit application.
- B. Paper Faced Trim Accessories: Paper faced trim accessories by Drywall Systems International. Products with comparable performance characteristics by Dietrich Metal Framing and U.S.G. Corp. are acceptable.
 1. Paper Faced Trim Accessories: "No-Coat Paper Faced Trims", latex saturated paperboard laminated to proprietary copolymer plastic and paper joint tape.

2.6 Interior Joint Treatment Materials

- A. Joint Treatment Materials: Comply with ASTM C 475.
 1. Joint Compound for Interior Gypsum Wallboard: Ready-mixed, non-asbestos, materials for each coat that is compatible with other compounds applied on previous or for successive coats.
 - a. Prefilling: At open joints, beveled panel edges, and damaged surface areas, use setting-type taping compound.
 - b. Embedding and First Coat: For embedding tape and first coat on joints, flanges of trim accessories, and fasteners, use "SHEETROCK Taping Joint Compound Ready-Mixed", or "SHEETROCK All Purpose Joint Compound Ready-Mixed".
 - c. Fill Coat: For second coat, use "SHEETROCK Topping Joint Compound Ready-Mixed", or "SHEETROCK Lightweight All Purpose Joint Compound Ready-Mixed (PLUS 3)".
 - d. Finish Coat: For third coat, use "SHEETROCK Topping Joint Compound Ready-Mixed", or "SHEETROCK Lightweight All Purpose Joint Compound Ready-Mixed (PLUS 3)".

- e. Laminating Adhesive: ASTM C 475, "SHEETROCK Taping Joint Compound Ready-Mixed", or "SHEETROCK All Purpose Joint Compound Ready Mixed" joint compound.
2. Joint Compound for Interior Cement Board: Latex fortified mortar with "Durock Interior Tape".
3. Joint Tape: "SHEETROCK Brand Joint Tape", cross-fibered paper, or "SHEETROCK Brand Fiberglass Drywall Tape" Self-adhesive, with cross-fiberglass construction.
4. Cement Board Joint Tape: "DUROCK Brand Interior Tape: 2" wide, alkali-resistant glass-fiber tape.
5. Mold Resistant Panels:
 - a. Joint Compound: "SHEETROCK Brand Setting-Type Durabond or Lightweight Setting-Type Easy Sand Joint Compound".
 - b. Tape: "SHEETROCK Brand Paper Tape".
 - c. First Coat: "SHEETROCK First Coat".
 - d. Trim: "SHEETROCK Brand Paper-Faced Metal Bead and Trim" for areas requiring Level 4 finish or less.
 - e. Finish: "SHEETROCK Brand Primer-Surfacer Tuff Hide" for areas requiring Level 5 finish.

2.7 Miscellaneous Materials

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033" to 0.112" thick.
 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

PART 3 - EXECUTION

3.1 Examination

- A. Examine substrates to which drywall construction attaches or abuts, preset hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of drywall construction. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 Preparation

- A. Ceiling Anchorages: Coordinate installation of ceiling suspension system with installation of overhead structural systems to ensure inserts and other structural anchorage provisions have been installed to receive ceiling anchors in a manner that will develop their full strength and at spacing required to support ceiling.

1. Furnish concrete inserts and other devices indicated, to other trades for installation well in advance of time needed for coordination with other construction.

3.3 Installation of Steel Framing, General

- A. Steel Framing Installation Standard: Install steel framing to comply with ASTM C 754 and ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, and similar construction to comply with details indicated and with recommendations of gypsum board manufacturer. If none available, comply 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.
 1. Where edges of suspended ceilings abut building structure horizontally at ceiling perimeters or penetration of structural elements.
 2. Where partitions and wall framing abuts overhead structure.
 3. Provide slip or cushioned type joints as detailed 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.

3.4 Installation of Steel Framing For Suspended Ceilings

- A. Secure hangers to structural support by connecting directly to structure where possible, otherwise connect to cast-in concrete inserts or other anchorage devices or fasteners as indicated.
 1. Do not attach hangers to metal deck tabs or metal roof deck.
 2. Do not attach hangers to underside of concrete slabs with powder-actuated fasteners.
- B. Do not connect or suspend steel framing from ducts, pipes or conduit.
- C. Keep hangers and braces 2 inches clear of ducts, pipes and conduits.
- D. Keep hangers and braces 2 inches clear of ducts, pipes and conduits.
- E. Install suspended steel framing components in sizes and at spacings indicated but not less than that required by referenced steel framing installation standard.
 1. Wire Hangers: 0.1620 inch diameter (8 gage), 4 feet on center.
 2. Carrying Channels (Main Runners): 1-1/2 inch, 4 feet on center.

- F. Installation Tolerances: Install steel framing components for suspended ceilings so that cross furring members or grid suspension members are level to within 1/8 inch in 12 ft. as measured both lengthwise on each member and transversely between parallel members.
- G. Wire-tie or clip furring members to main runners and to other structural supports as indicated.
- H. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross furring members to each other and butt-cut to fit into wall track.

3.5 Installation of Steel Framing for Walls and Partitions

- A. Install runners (tracks) at floors, ceilings and structural walls and columns where gypsum drywall stud system abuts other construction.
 - 1. Provide deflection tracks at the heads of all partitions that abut roof structure above.
 - 2. Where studs are installed directly against exterior masonry or concrete walls, install asphalt felt strips between studs and wall.
- B. Installation Tolerances: Install each steel framing and furring member so that fastening surfaces do not vary more than 1/8 inch from plane of faces of adjacent framing.
- C. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
- D. Install steel studs and furring in sizes and at spacings indicated but not less than that required by referenced steel framing installation standard.
- E. Install steel studs so flanges point in the same direction and gypsum boards can be installed in the direction opposite to that of the flange.
- F. Frame door openings with double 20 gauge studs. 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.
- 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. Horizontal Stiffeners: Install horizontal stiffeners at 24 inches on center at all toilet room chase walls.

- I. Diagonal Bracing: Install diagonal braces at full height interior partitions that extend greater than 16 feet in height.

3.6 Application and Finishing of Gypsum Board, General

- A. Gypsum Board Application and Finishing Standard: Install and finish gypsum board to comply with ASTM C 840.
- B. Install sound attenuation blankets where indicated, before gypsum board unless readily installed after board has been installed.
- C. 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.
- D. Install ceiling boards across framing in a manner to minimize the number of end-butt joints, and which avoids end joints in the central area of each ceiling. Stagger end joints at least 24 inches.
- E. Install wall/partition boards in a manner to minimize the number of end-butt joints or avoid them entirely where possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.
- F. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a tight contact at edges and ends with not more than 1/16 inch open space between boards. Do not force into place.
- G. Locate either edge or end joints over supports, except in horizontal applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.
- H. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.
- I. Form control joints and expansion joints at maximum of 20 feet on center, with space between edges of boards, prepared to receive trim accessories.
- J. Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above ceilings, etc.), except in chase walls that 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.

- K. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide ¼" wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- L. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.
- M. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4 inch to 1/2 inch space and seal. Seal joints with acoustical sealant.
- N. Where sound-rated drywall construction is indicated, seal construction at perimeters, control and expansion joints, openings and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim, and close off sound-flanking paths around or through construction, including sealing of partitions above acoustical ceilings.
- O. Space fasteners in gypsum boards in accordance with referenced gypsum board application and finishing standard and manufacturer's recommendations.

3.7 Methods of Gypsum Board Application

- A. Single-Layer Application: Install gypsum wallboard as follows:
 - 1. Ceilings: Apply ceiling gypsum board before wall/partition board application to the greatest extent possible.
 - 2. Partitions/Walls: Apply gypsum board vertically (parallel to framing), unless otherwise indicated, and provide sheet lengths that will minimize end joints. Stagger joints in drywall on opposite sides of metal studs.
- B. Double-Layer Application: Install gypsum backing board for base layer and gypsum wallboard for face layer.
 - 1. Partitions/Walls: Apply base layer and face layers vertically (parallel to framing), with joints of base layer over supports and face layer joints offset at least 10 inches with base layer joints.
- C. Direct-Bonding to Substrate: Where gypsum board is indicated to be directly adhered to a substrate (other than studs, joists, furring members or base layer of gypsum board), comply with gypsum board manufacturer's recommendations, and temporarily brace or fasten gypsum board until fastening adhesive is set.
- D. Single-Layer Fastening Methods: Screw apply gypsum boards to in accordance with manufacturer's recommendations.
- E. Double-Layer Fastening Methods: Screw apply gypsum board base layer and face layer separately to supports.

3.8 Applying Tile Backing Panels

- A. Water-Resistant Gypsum Backing Board: Install at showers, tubs and where indicated. Install with ¼" gap where panels abut other construction or penetrations.
- B. Glass-Mat, Water-Resistant Backing Panel: Comply with manufacturer's written installation instructions and install at showers, tubs, and where indicated. Install with ¼" gap where panels abut other construction or penetrations.
- C. Cementitious Backer Units: ANSI A108.1, at showers, tubs, and at locations indicated to receive tile.
- D. Areas Not Subject to Wetting: Install regular-type gypsum wallboard panels to produce a flat surface except at showers, tubs, and other locations indicated to receive water-resistant panels.
- E. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.9 Accessories Installation

- A. Insulation: Install sound attenuation blankets in sound rated partitions and ceilings where indicated.
 - 1. Completely fill space between studs and framing to full height of partition wall or full ceiling area.
 - 2. Fit carefully behind electrical outlets and other work penetrating sound-rated construction.
- B. Acoustical Sealant:
 - 1. At partition walls, provide continuous beads of acoustic sealant at juncture of both faces of runners with floor and ceiling construction, and wherever gypsum board abuts dissimilar materials, prior to installation of gypsum board.
 - 2. At ceilings, provide continuous beads of sealant wherever gypsum board abuts dissimilar materials.
 - 3. Provide continuous bead of sealant behind faces of control joints prior to installation of control joint accessories.
 - 4. After installation of gypsum board base layers, cut face layer sheets ½" less than floor to ceiling height and position with ¼" open space between gypsum board and floor, ceiling and dissimilar vertical construction. Fill ¼" open space with continuous sealant beads after installation of face layer.
 - 5. At openings and cutouts, fill open spaces between gypsum board and fixtures, cabinets, ducts and other flush or penetrating items, with continuous bead of sealant.

6. Seal sides and backs of electrical boxes to completely close off openings and joints.

3.10 Trim Accessories Installation

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Interior Trim: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
 1. Install metal corner beads at external corners.
 2. Install metal casing bead trim where edge of gypsum board is exposed or semi-exposed.

3.11 Finishing Gypsum Board

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Pre-fill open joints, rounded or beveled edges and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below:
 1. Level 0: No taping, finishing, or accessories required. Use at temporary construction and draft stopping areas.
 2. Level 1: Embed tape at joints in ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistance-rated assemblies and sound-rated assemblies.
 3. Level 2: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges where panels are substrate for tile.
 4. Level 3: Embed tape and apply separate first and fill coats of joint compound to tape, fasteners, and trim flanges. Use in areas scheduled to receive heavy texture painted finish.
 5. Level 4: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges at panel surfaces that will be exposed to view and scheduled to receive a painted finish or wall covering.
 6. Level 5: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply skim coat of joint compound over entire surface. Use in areas exposed to view and scheduled to receive a gloss, semi-gloss, or enamel painted finish.

- E. Glass-Mat, Water-Resistant Backing Panels: Finish according to manufacturer's written instructions.
- F. Cementitious Backer Units: Finish according to manufacturer's written instructions.
- G. Abuse Resistant Panels:
 - 1. Surface Preparation: complete gypsum board surface treatment to Level 4 finish before applying primer-surfacer.
 - 2. Primer-Surfacer: Machine apply materials in conformance with manufacturer's written application instructions to a wet film thickness of 15 to 20 mils (9-12 mils dry film thickness).
- H. Sand joint compound at exposed finished areas to provide surfaces free of tool marks, ridges, and other imperfections, and ready for application of scheduled finishes.

3.12 Protection

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.
- C. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges to comply with manufacturer's recommendations.
- D. Install corner beads at external corners.
- E. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. Provide type with face flange to receive joint compound.
 - 1. Install "LC" bead where drywall construction is tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
 - 2. Install "L" bead where edge trim can only be installed after gypsum board is installed.
- F. Install control joints at locations indicated, or if not indicated, at spacings and locations required by referenced gypsum board application and finish standard, and approved by the Architect for visual effect.

3.13 Finishing of Drywall

- 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. Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.
- C. Finish interior gypsum wallboard by applying the following joint compounds in 3 coats (not including pre-fill of openings in base), and sand between coats and after last coat:
 - 1. Embedding and First Coat: Ready-mix or job mixed setting type joint or taping compound.
 - 2. Fill (Second) Coat: Ready-mix or job mixed topping compound.
 - 3. Finish (Third) Coat: Ready-mix or job mixed topping compound.
- D. Partial Finishing: Omit third coat and sanding on concealed drywall construction which is indicated for drywall finishing or which requires finishing to achieve fire-resistance rating, sound rating or to act as air or smoke barrier.

3.14 Protection

- A. Provide final protection and maintain conditions, in a manner suitable to Installer, which ensures gypsum drywall construction being without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 09 5113 - ACOUSTIC PANEL CEILINGS

PART 1 - GENERAL

1.1 Summary

- A. The extent of acoustical panel ceilings is indicated on drawings and schedules. Types of work in this section include all ceiling tiles, hangers, grid and accessories.
 - 1. Complete system installation in areas scheduled on drawings.
 - 2. Accessory trim edges.
 - 3. Provide replacement tiles at locations indicated.

- B. Related Sections:
 - 1. Sprinkler heads for fire protection - Ref: Fire Suppression Drawings.
 - 2. Grilles, registers, and diffusers - Ref: Mechanical Drawings.
 - 3. Lighting fixtures - Ref: Electrical Drawings.

1.2 Submittals

- A. Product data for each type of acoustical ceiling product specified.

- B. Samples, for verification purposes, of each type of exposed finish required, prepared on samples 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 square samples of each acoustical panel type, pattern, and color.
 - 2. Set of 12 inch long samples of exposed suspension system members, including moldings, for each color and system type required.

- C. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.

1.3 Quality Assurance

- A. Installer qualifications: An experienced Installer who has successfully completed acoustical ceiling similar in material, design, and extend to those indicated for Project, with a minimum of 5 years experience.

- B. Fire-Performance Characteristics (if required): Provide acoustical ceilings that are identical to those tested for the following fire-performance characteristics, per ASTM test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

1. Surface Burning Characteristics: Flame spread of 25 or less and smoke developed of 50 or less, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.
- C. 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.
- D. 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.
- E. Coordination of Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with other construction that penetrates ceiling or is supported by them, including light fixtures, HVAC equipment, fire-suppression system components, and partition system.

1.4 Delivery, Storage, and Handling

- A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical ceiling units, permit them 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.

1.5 Project Conditions

- A. Space Enclosure: Do not install interior acoustical ceiling until space is enclosed and weatherproof, wetwork 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.

1.6 Extra Materials

- A. Furnish extra materials for Owner's future use, in full un-opened boxes, and are identified with appropriate labels in the quantities listed below. Store as directed by Construction Manager.
 1. Acoustical Ceiling Units: Furnish quantity of full size units as follows:
 - a. One (1) box each type of ceiling tile.
 2. Exposed Suspension System Components: None.

PART 2 - PRODUCTS

2.1 Manufacturers

- A. Manufacturers:
 - 1. Ceiling Tiles:
 - a. Armstrong World Industries.
 - b. USG Interiors, Inc.
 - 2. Suspension Systems:
 - a. Armstrong World Industries.
 - b. Chicago Metallic Corporation.
 - c. National Rolling Mills, Inc.
 - d. USG, Donn.

2.2 Materials

- A. Acoustic Tile Ceilings
 - 1. **See Drawings for Schedule of Materials.**

2.3 Accessory Materials:

- A. Attachment Devices: Size for 5 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, sized so 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 or extruded aluminum 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. Lay-in Panels with Reveal Edge Details: Stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
 - 2. Circular Penetrations of Ceiling: Provide edge moldings fabricated to diameter required to fit penetration exactly.
- D. Suspension system shall be not less in size and strength than required to support itself and shall be increased in size and strength as necessary to support the light fixtures, acoustical units and related items without deflecting more than 1/360 of the span of when tested as a simple beam, ends free.
- E. Provide hold-down clips at vestibule ceiling locations.

2.4 Accessory Materials:

- A. Attachment Devices: Size for 5 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, sized so 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 or extruded aluminum 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. Lay-in Panels with Reveal Edge Details: Stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
 - 2. Circular Penetrations of Ceiling: Provide edge moldings fabricated to diameter required to fit penetration exactly.
- D. Suspension system shall be not less in size and strength than required to support itself and shall be increased in size and strength as necessary to support the light fixtures, acoustical units and related items without deflecting more than 1/360 of the span of when tested as a simple beam, ends free.

PART 3 - EXECUTION

3.1 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.

3.2 Preparation

- A. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.
 - 1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.
- B. 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.

3.3 Installation

- A. General: Install acoustical ceiling systems in accordance with ASTM C 636 requirements, manufacturer's installation instructions, and CISCA "Ceiling Systems Handbook."
- B. Arrange acoustical units and orient directionally patterned units in a manner shown by reflected ceiling plans.
- C. 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 when required to miss obstructions and offset resulting horizontal forces by bracing, counter-splaying, or other equally effective means.
 - 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. 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 a manner that will not cause them to deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 4. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 - 5. Space hangers not more than 4 feet on center along each member supported directly from hangers, unless otherwise shown, and provide hangers not more than 8 inches from ends of each member.
- D. Install edge moldings of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical units.
 - 1. Screw-attach moldings to substrate at intervals not over 16 inches on center and not more than 3 inches from ends, leveling with ceiling suspension system to tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
- E. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.

3.4 Cleaning

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning

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and touch-up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 6500 - RESILIENT FLOORING, BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 Sections Include

- A. Extent of resilient flooring and accessories for the rooms is shown on drawings and schedules. Types of work in this section include:
 - 1. Resilient tile flooring.
 - 2. Resilient base.
 - 3. Vinyl transition strips.
 - 4. Accessories.
 - 5. Floor preparation and testing.
 - 6. Initial maintenance after installation.
 - 7. Stripping and re-waxing/sealing of existing VCT flooring to remain.

1.2 Related Sections

- A. Carpet – Ref: Section 09 6800.

1.3 Reference Standards

- 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; 2002.
- C. SCAQMD 1168 – South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

1.4 Submittals

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Product Data for each type of resilient flooring and accessory required.
- C. Samples, for verification purposes, of each type, color and pattern of resilient flooring required, showing full range of color and pattern variations.
 - 1. Full size tile samples.
 - 2. Accessories: 2-1/2 inch long samples of resilient flooring accessories.
- D. Maintenance Instructions: Submit 2 copies of manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.

1.5 Quality Assurance

- A. Manufacturer: Provide each type of resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds.
- B. Fire-Test-Response Characteristics:
 - 1. Critical Radiant Flux Classification Class I, not less than 0.45 W/sq. cm per ASTM E 648.
 - 2. Smoke Development: <450 per ASTM E 662.

1.6 Project Conditions

- A. Concrete Slab Curing Materials and Methods: Review concrete slab curing and sealing materials submittals provided by General Contractor for compatibility with adhesive materials provided under this Section. Notify General Contractor, in writing, of materials' compatibility or non-compatibility with adhesive materials provided under this Section. Proceed with installation only after compatible materials and/or curing methods have been approved, or non-compatible curing or sealing materials have been removed by the General Contractor.
- B. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg. F or more than 95 deg F in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- C. After post-installation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- D. Prior to start of installation, test concrete for moisture content and adhesive bond as determined by flooring manufacturer's recommended moisture and bond tests.
- E. Install resilient products after other finishing operations, including painting, have been completed.
- F. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by resilient flooring manufacturer's recommended bond and moisture test.
- G. Close spaces to traffic during floor covering installation.
- H. Close spaces to traffic for 48 hours after floor covering installation.

1.7 Extra Materials

- A. Furnish maintenance materials from same manufactured lot as materials installed and enclosed in protective packaging appropriate labels in the quantities listed below. Store materials as directed by Owner.
 - 1. VCT: One (1) box of each type and color.
- B. Excess Materials: In addition to extra materials noted above, turn over unused resilient and installation materials to the Owner's representative. Package materials with protective covers for storage and identify with labels describing contents and color.
- C. Provide a typed list of extra and excess materials and turn over to the Owner's representative.

PART 2 - PRODUCTS

2.1 Vinyl Composition Tile - Manufacturers

- A. **See Drawings for Schedule of Manufacturers.**

2.2 Materials

- A. **See Drawings for Schedule of Materials.**

2.3 Resilient Wall Base

- A. **See Drawings for Schedule of Materials.**
- B. Vinyl Wall Base:
 - 1. Product: "Vinyl Wall Base".
 - 2. Type (Material Requirement): TV (vinyl).
 - 3. Group (Manufacturing Method): I (solid, homogeneous).
 - 4. Style: coved and Straight (toeless).
 - 5. Minimum Thickness: 0.125".
 - 6. Height: As indicated in Room Finish Schedule on Drawings.
 - 7. Lengths: Coils in manufacturer's standard length.
 - 8. Inside and Outside Corners: Job formed. Pre-molded corners only permitted where proper anchorage cannot be obtained.
 - 9. Surface: Smooth.
 - 10. Colors: Selected from manufacturer's standard palette. Colors not to exceed three (3) for entire project.
 - 11. Fire-Test-Response Characteristics: Critical Radiant Flux Classification Class I, not less than 0.45 W/Sq. cm per ASTM E 648.
- C. Fire-Test-Response Characteristics: Critical Radiant Flux Classification Class I, not less than 0.45 W/sq. cm per ASTM E 648.

2.4 Resilient Moldings and Accessories

- A. Resilient moldings and accessories by Johnsonite form the basis-of-design. Products with comparable size, material, performance characteristics, and colors by the following are also acceptable.
 - 1. BurkeMercer.
 - 2. Flexco.
 - 3. Roppe.
- B. Material: Vinyl, Rubber.
- C. Fire-Test-Response Characteristics: Critical Radiant Flux Classification Class I, not less than 0.45 W/sq. cm per ASTM E 648.
- D. Vinyl transitions strips:
 - 1. **See Drawings for Schedule of Materials.**
- E. Vinyl/Rubber base:
 - 1. **See Drawings for Schedule of Materials.**
- F. Adhesives: Adhesives used in interior locations must not emit more than 50 g/l for VCT and Subfloor Adhesives.
- G. Water-resistant stabilized type as recommended by flooring manufacturer or as indicated below.
 - 1. VCT: Armstrong adhesive #S-700 or #S-515.
 - 2. High moisture: Use Armstrong adhesive #S-240 in areas that are consistently wet.
 - 3. Scribing Felt: Armstrong adhesive #S-235.
 - 4. Wall base adhesive #S-515.
- H. Concrete Slab Primer: Non-staining as recommended by flooring manufacturer.
- I. Trowelable Leveling and Patching Compounds: Products by TEC Inc. Equal products by Bostic, and Mapei or comparable materials recommended by flooring manufacturer for applications indicated are also acceptable.
 - 1. Material: VersaPatch, latex modified patch and leveling compound.
 - 2. Additive: Patch Additive 861.
 - 3. Primer: Primer.
- J. Concrete Slab primer: Non-staining type as recommended by flooring manufacturer. Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
- K. Scribing Felts: Gray cellulosic synthetic fiber felt, Armstrong #S-153.
- L. Protective Coat: "Revive Plus SC" Neutral Cleaner and "Vectra" Floor Finish by Johnson Wax Products.

PART 3 - EXECUTION

3.1 Examination

- A. Examine subfloor surfaces to determine it is satisfactory. A satisfactory subfloor surface is defined is one that is smooth and free from cracks, holes, ridges, coatings preventing adhesive bond, and other defects impairing performance or appearance.
- B. Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory.

3.2 Preparation

- A. Prepare subfloor surfaces as follows:
 - 1. Use leveling and patching compounds as recommended by resilient flooring manufacturer for filling small cracks, holes and depressions in subfloors.
 - 2. Remove coatings from subfloor surfaces that would prevent adhesive bond, including curing compounds incompatible with resilient flooring adhesives, paint, oils, waxes and sealers.
- B. Concrete Substrates for Stair Accessories: Prepare according to ASTM F 710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - 3. Moisture Testing:
 - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/100 sq. ft. in 24 hours.
 - b. Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
- C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates. Trowel to smooth finish with surfaces that align with adjacent substrate, and without defects that might telegraph through flooring.
- E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
 - 1. Install resilient products after they are the same temperature as the space where they are to be installed.

- F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.
- G. Apply concrete slab primer, if recommended by flooring manufacturer, before application of adhesive. Apply in compliance with manufacturer's directions.

3.3 Installation, General

- A. Installation shall be in strict accordance with "Armstrong Engineered Installation System" manual.
- B. Extend resilient flooring into toe spaces, door reveals, and into closets and similar openings. Scribe, cut, and fit resilient flooring to permanent fixtures, built-in furniture and cabinets, pipes, outlets and permanent columns, walls and partitions.
- C. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.
- D. Tightly cement resilient flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll resilient flooring at perimeter of each covered area to assure adhesion.

3.4 Installation, Tile Floors

- A. Lay tile from center marks established with principal walls, discounting minor offsets, so tile at opposite edges of room are of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tiles square to room axis unless otherwise shown.
- B. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped or deformed tile are not acceptable.
- C. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- D. Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.
- E. Extend tiles into toe spaces, door reveals, closets, and similar openings.

- F. Maintain reference markers, holes and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, non-staining marking device.
- G. Install tiles on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern with pieces of tile installed on covers. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

3.5 Installation, Accessories

- A. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with preformed corner units, or fabricated from base materials with mitered or coped inside corners. Tightly bond base to substrate throughout length of each piece, with continuous contact to horizontal and vertical surfaces.
 - 1. On irregular wall substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
- B. Scribing Felts: When installing thinner gauge material next to thicker materials, install thicker material first.
 - 1. Butt 12-inch wide piece of Scribing Felt against thicker material and adhere with specified adhesive.
 - 2. Use leveling or patching compound to featheredge of scribing felt to level of substrate.
 - 3. Allow patch to dry completely before installing flooring.

3.6 Resilient Wall Base Installation

- A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
- C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- D. Do not stretch wall base during installation.
- E. On masonry surfaces or other similar irregular substrates, fill voids along top edge of wall base with manufacturer's recommended adhesive filler material.
- F. Pre-molded Corners: Install pre-molded corners before installing straight pieces. Install only where proper anchorage for job formed corners cannot be obtained.

- G. Job-Formed Corners:
 - 1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (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 a snug fit without removing more than half the wall base thickness.
 - 2. Inside Corners: Use straight pieces of maximum lengths possible. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

3.7 Inspection

- A. Finish floor shall be tested for smoothness as follows:
 - 1. An 8" straightedge may be placed anywhere on the floor; the gap between the straightedge and the floor shall not exceed 1/4" anywhere along the edge of the straight edge.

3.8 Cleaning, Protection and Initial Maintenance after Installation

- A. Perform following operations immediately upon completion of resilient flooring.
 - 1. Sweep or vacuum floor thoroughly.
 - 2. Do not wash floor until time period recommended by resilient flooring manufacturer has elapsed to allow resilient flooring to become well-sealed in adhesive. Minimum 4 days.
 - 3. Damp-mop floor being careful to remove black marks and excessive soil.
 - 4. Remove any excess adhesive or other surface blemishes, using appropriate cleaner recommended by resilient flooring manufacturers.
- B. Initial Maintenance:
 - 1. Clean resilient flooring not more than 4 days before date scheduled for inspections intended to establish date of substantial completion in each area of project. Clean resilient flooring by method recommended by resilient flooring manufacturer.
 - 2. Apply two (2) coats of tile manufacturers recommended a high-quality commercial floor polish.
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

END OF SECTION

SECTION 09 6800 - CARPET

PART 1 - GENERAL

1.1 Section Includes

- A. Extent and location of carpet is indicated on drawings and in **Finish Schedules** and the following:
 - a. Floor preparation and testing.
 - b. Installation materials.

1.2 Related Requirements

- 1. Resilient flooring, Base and Accessories - Ref: Section 09 6500.

1.3 Quality Assurance

- A. Manufacturer Qualifications: A firm (material producer) with not less than 10 years of production experience whose published literature clearly indicated product compliance with specified requirements.
- B. Installer qualifications: A firm specializing in carpet installation with not less than 10 years of experience in installation of carpeting similar to that required for this project and who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.
- C. Single Source Responsibility: Provide material produced by a single manufacturer for each carpet type.
- D. Fire Performance Characteristics: Provide carpeting identical to that tested for the following fire performance requirements according to test method indicated, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Flammability:
 - a. Rating: As indicated.
 - b. Test Method: ASTM D 2859 or DOC FF-1-70.
 - 2. Critical Radiant Flux: As follows:
 - a. Rating: Test for burning under varying radiant energy levels with minimum average radiant flux rating of not less than 0.22 watts/sq.cm.
 - b. Test Method: ASTM E 648.
 - 3. Smoke Density: As follows:
 - a. Flame Rating: Mean average - 450 or less.
 - b. Test Method: ASTM E 662.
- E. Certification: Submit manufacturer's certificate stating materials furnished comply with specified requirements. Include supporting certified laboratory testing data indicating material meets specified test requirements.

- F. All carpeting to comply with Americans with Disabilities Act (ADA), Section 4.5.3, and have a maximum pile thickness of ½".
- G. Specific Floor Preparation and Installation Instructions: Comply with Carpet and Rug Institute Standard for Installation of Commercial Carpet (CRI 104).

1.4 Submittals

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Product Data, manufacturer's product literature and installation instructions for each type of carpeting material and accessory required. Include methods of installation for each type of substrate.
 - 1. Submit written data on physical characteristics, durability, resistance to fading, and flame resistance characteristics.
 - 2. Carpet type, color and dye lot.
 - 3. Carpet cushion, if indicated.
- C. Shop Drawings showing carpet layout, clearly indicating carpet direction, and types of edge strips. Indicate columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet. Show installation details at any special conditions.
 - 1. Seam locations.
 - 2. Pattern type, repeat size, location, direction and starting point.
 - 3. Pile direction.
 - 4. Insets and borders.
 - 5. Edge, transition and other accessory strips.
 - 6. Transition details to other flooring materials.
- D. Samples, for verification purposes, for each type of carpet material, edge stripping, and accessory item required. Submit the following:
 - 1. Carpet: 18 inch x 27 inch samples of each type required.
 - 2. Accessories: 12 inch long samples of each type exposed edge stripping and accessory item.
 - 3. Carpet Cushion: 6" square sample.
 - 4. Prepare samples from same material to be used for the work.
- E. Certified Test Reports showing compliance with specified fire performance characteristic requirements and physical properties indicated.
- F. Maintenance data.

1.5 Delivery, Storage, and Handling

- A. Comply with CRI 104, Section 5, "Storage and Handling". Deliver carpet materials to project site in original factory wrappings and containers, clearly

labeled with identification of manufacturer, brand name, quality or grade, fire hazard classification, and lot number.

- B. Store carpet materials in original undamaged packages and containers, inside well-ventilated area protected from weather, moisture, soilage, extreme temperatures, and humidity; laid flat, blocked off ground to prevent sagging and warping. Maintain minimum temperature in storage area above 40 degrees F.
- C. Comply with manufacturer's instructions and recommendations for special delivery, storage, and handling requirements.

1.6 Sequencing and Scheduling

- A. Sequence carpet installation with other work to minimize possibility of damage and soiling during remainder of construction period.

1.7 Project Conditions

- A. Concrete Slab Curing Materials and Methods: Review concrete slab curing and sealing material submittals provided by General Contractor for compatibility with adhesive materials provided under this Section. Notify General Contractor, in writing, of materials' compatibility or non-compatibility with adhesive materials provided under this Section. Proceed with installation only after compatible materials and/or curing methods have been approved, or non-compatible curing or sealing materials have been removed by the General Contractor.
- B. Comply with CRI 104, Section 7.2, "Site Conditions; Temperature and Humidity" and Section 7.12, "Ventilation".
- C. Do not install carpet over concrete slabs until they have cured and are sufficiently dry to bond with adhesive, and concrete slabs have attained pH range recommended by manufacturer.
- D. Where demountable partitions or other items are indicated for installation on top of carpet, install carpet before these items are installed.

1.8 Warranty

- A. Special Warranty for Carpet: Manufacturer's standard form in which manufacturer agrees to repair or replace components of carpet installation that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, loss of tuft bind strength, and delamination.
 - 1. Warranty Period: Ten (10) years from date of Substantial Completion.

1.9 Maintenance

- A. Maintenance Instructions: Submit manufacturer's printed instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated traffic and use conditions. Include precautions against materials and methods which may be detrimental to finishes and performance.

1.10 Extra Materials

- A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Carpet: Full-widths rolls equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.
- B. Excess Materials: In addition to extra materials noted above, turn over useable excess unused flooring and installation materials to Owner's representative. Package materials with protective covers for storage and identify with labels describing contents and color.
- C. Provide a typed list of extra and excess materials to Owner's representative.

PART 2 - PRODUCTS

2.1 Manufacturers

- A. Carpet by Shaw Contract Group forms the basis-of-design.

2.2 Materials

- A. Carpet.
 - 1. **See Drawings for Schedule of Materials.**

2.3 Installation Accessories

- A. Trowelable Leveling and Patching Compounds: Underlayment products by TEC Inc. Comparable products by Bostik and Mapei, or materials recommended by carpet manufacturer are also acceptable.
 - 1. Material: VersaPatch, latex modified patch and leveling compound.
 - 2. Additive: Patch Additive 861.
 - 3. Primer: Primer.
- B. Installation Adhesive: Direct glue down method with solvent free and VOC (Volatile Organic Compounds) free adhesives as recommended for the purpose by the manufacturer for the selected carpet and approved by the General Contractor. Adhesives used for carpet must not emit more VOCs than 50 g/l.

- C. Carpet Edge Guard: Extruded or molded heavy-duty vinyl or rubber of size and profile indicated. See Section 09650 for transition strips.

PART 3 - EXECUTION

3.1 Examination

- A. Inspect subfloors to receive carpeting and notify General Contractor of major irregularities that require correction. Normal preparation of subfloor by this contractor includes leveling small areas and filling small cracks and holes. Remove dirt, oil, grease, and surface coatings affecting bond.
 - 1. Test concrete for moisture content. Install flooring over concrete after slabs have been cured and are sufficiently dry to achieve permanent bond with adhesive as determined by floor manufacturer's recommended bond and moisture test.
 - 2. Install underlayment on subfloor surfaces containing score or pock marks, and surface roughness. Trowel material to provide a smooth surface without defects which telegraph through flooring. Prime surfaces to receive flooring in accordance with manufacturer's recommendations.

3.2 Preparation

- A. Repair minor holes, cracks, depressions, and rough areas using material recommended by carpet or adhesive manufacturer.
- B. Clear away debris and scrape up cementitious deposits from surfaces to receive carpeting; vacuum clean immediately before installation. Check concrete surfaces to ensure no dusting through installed carpet; apply sealer where required to prevent dusting.

3.3 Installation

- A. Comply with CRI 104 and carpet manufacturers' written installation instructions for the following:
 - 1. Direct-Glue-Down Installation: Comply with CRI 104, Section 9, "Direct Glue-Down Installation".
- B. Install carpet in accordance with manufacturer's installation instructions and final shop drawings.
- C. Comply with carpet manufacturer's written recommendations and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile.
 - 1. Maintain uniformity of carpet direction and lay of pile. Bind or seal cut edges as recommended by carpet manufacturer.

- D. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves and similar openings.
 - 1. Cut out for conduits, pipes, columns, etc., and neatly trim raw edges of carpet. Leave no ragged edges exposed to view.
 - 2. Transitions to other materials or different color carpets occurring at door frames shall be made at the center line of the door in the closed position. Transitions at the frame edge or center line will not be accepted.
 - 3. Install transition strips at all locations where carpet transitions to other material.
- E. Install pattern parallel to walls and borders.
- F. Provide cutouts where required, and bind cut edges where not concealed by protective edge guards or overlapping flanges.
- G. Install carpet edge guard where edge of carpet is exposed; anchor guards to substrate.
- H. Expansion Joints: Do not bridge expansion joints with continuous carpeting; provide for movement.

3.4 Cleaning

- A. Remove and dispose of debris and unusable scraps. Vacuum with commercial machine with face-beater element. Remove spots and replace carpet where spots cannot be removed. Remove any protruding face yarn using sharp scissors.

3.5 Protection

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer, to ensure carpet is not damaged or deteriorated at time of Substantial Completion.

END OF SECTION

SECTION 09 9000 – PAINTING AND COATING

PART 1 - GENERAL

1.1 Section Includes

- A. Surface preparation.
- B. Field application of paints, stains, and other coatings.
- C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
- D. Paint exposed surfaces whether or not colors are designated in Finish Schedule, except where a surface or material is specifically indicated not to be painted or is to remain natural. If color or finish is not designated, the Tenant will select from standard colors or finishes available.
- E. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.
 - 1. Prefinished items not to be painted include the following factory-finished components:
 - a. Acoustic materials.
 - b. Finished mechanical and electrical equipment.
 - c. Light fixtures.
 - d. Switchgear.
 - e. Distribution cabinets.
 - 2. Concealed surfaces not to be painted include wall or ceiling surfaces in the following generally inaccessible areas:
 - a. Foundation spaces.
 - b. Furred areas.
 - c. Pipe spaces.
 - d. Duct shafts.
 - 3. Finished metal surfaces not to be painted include:
 - a. Anodized or mill finished aluminum.
 - b. Stainless steel.
 - c. Chromium plate.
 - d. Copper.
 - e. Bronze.
 - f. Brass.
 - 4. Operating parts not to be painted include moving parts of operating equipment such as the following:
 - a. Valve and damper operators.
 - b. Linkages.
 - c. Sensing devices.
 - d. Motor and fan shafts.
 - 5. Other Items:
 - a. Concrete floors, except as specifically indicated otherwise.

- b. Pipes, ducts, valves, fittings, conduits, fans, and insulation, in areas above suspended ceilings.
- c. Striping of exterior pavements.
- 6. Labels: Do not paint over Underwriter's Laboratories, Factory Mutual or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- 7. Extra and excess materials indicated.

1.2 Related Requirements

- A. Hollow Metal Doors and Frames: Shop-primed items – Ref: Section 08 1113.

1.3 Reference Standards

- A. 49 CFR 59, Subpart D – National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental protection Agency; current edition.

1.4 Submittals

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on all finishing products, including VOC content.
- C. Samples: Submit two painted samples, illustrating selected colors for each color and system selected. Submit on durable sheet material, 8 x 11 inch in size.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 – Product Requirements, for additional provisions.
 - 2. Extra Paint and Coatings: 2 gallons of each color; store where directed.
 - 3. Label each container with color in addition to the manufacturer's label.

1.5 Quality Assurance

- A. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.
- B. Installation: Installation by skilled commercial painters with not less than five (5) years of continuous experience with materials equal in quality on projects of comparable scope. A satisfactory crew of qualified painters shall be maintained throughout the duration of the work.
- C. MPI Standards:
 - 1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List".
 - 2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

- D. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
 - b. Other Items: Architect will designate items or areas required.
 2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
 3. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.
- E. Materials:
1. Provide ready-mixed paints and stains. Job mixing and tinting is not acceptable.
 2. Provide lead free materials with mildew and mold resistant top coatings.
 3. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer's testing and field experience.
 4. Minimum dry film thickness (dft) for each coat is listed in millimeters (mils) in the Material Schedule within this Section.
- F. 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.

1.6 Delivery, Storage, and Handling

- A. Deliver materials to the job site in the 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.
 9. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 degrees F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.7 Project Conditions

- A. Storage: Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain stored containers in a clean condition, free of foreign materials and residue. Protect from freezing.
1. Deliver painting materials in sealed, original labeled containers bearing manufacturer's name, brand name, type of paint or coating, color designation, standard compliance, materials content as well as mixing and/or reducing and application requirements.
 2. Take necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion and to protect environment from hazard spills. Store all materials that constitute a fire hazard (paints, solvents, drop cloths, etc.) in suitable closed and rated containers. Post adequate warnings (e.g. no smoking) as required.
 3. Keep storage areas neat and orderly. Remove oily rags and waste daily, and dispose of off-site in a manner approved by authorities having jurisdiction.
- B. Environmental Conditions:
1. Apply waterborne paints and finishes only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.
 2. Apply solvent-thinned paints and finishes only when temperatures of surfaces to be painted and surrounding air are between 45 F.
 3. Do not apply paint or finish material in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
- C. Work Conditions:
1. Coordinate with other trades to insure adequate illumination, ventilation and dust-free environment during paint and finish application and drying. Maintain temperature and humidity within manufacturer's recommended tolerances throughout the work.
 2. Before commencing work on any surface type, carefully inspect same and verify they are clean, dry and in all other respects suitable to receive specified treatment. Use cleaning materials and methods appropriate for substrate and field conditions.
 3. Protection and Cleaning: Provide clean drop cloths, and other protection as approved, to protect floors, doors, windows and other parts from damage. Where any work is splattered, clean promptly and leave in satisfactory condition.
 4. Use no plumbing fixtures, open waste or vent pipe, or pipe of any kind to dispose of paint, used rags, waste or other materials.

5. Water closets, tubs, and other fixtures, cabinets, furniture, etc., shall not be used as supports for planking, and shall be thoroughly protected from damage at all times.
 6. Mixed species of wood occurring within the same room or adjacent to one another shall be finished to match the selected species and finish.
- D. Concrete Slab Curing Materials and Methods: Review concrete slab curing and sealing material submittals provided by General Contractor for compatibility with floor coating materials provided under this Section. Notify General Contractor, in writing, of materials' compatibility or non-compatibility with floor coating materials provided under this Section. Proceed with installation only after compatible materials and/or curing methods have been approved, or non-compatible curing or sealing materials have been removed by the General Contractor.
- E. Waste Management and Disposal:
1. Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc.) are regarded as hazardous products and subject to regulations for disposal. Obtain information on required controls from applicable authorities having jurisdiction.
 2. Collect, separate and recycle waste materials where recycling is available. Treat materials that cannot be reused as hazardous waste and disposed of in an appropriate manner.
 3. Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated on-site for hazardous waste.
 4. The following procedures shall be strictly adhered to:
 - a. Retain cleaning water for water based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
 - b. Retain cleaners, thinners, solvents and excess paint, and place in designated containers and ensure proper disposal.
 - c. Return solvent and oil soaked rags for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
 - d. Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
 - e. Empty paint cans are to be dry prior to disposal or recycling (where available).
 - f. Close and seal tightly partly used cans of materials, including sealant and adhesive containers, and store in ventilated, fire safe areas at moderate temperatures.
 5. Set Aside and protect surplus and uncontaminated finish materials not required by Owner, and arrange collection for verifiable reuse or remanufacturing.
- F. Unless specifically noted, do not paint or finish prefinished items and surfaces, concealed surfaces, operating parts and the following:
1. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating or nomenclature plates.

2. Architectural Features: Aluminum doors, frames and windows, finish hardware, and copper, stainless steel or aluminum fabrications.

1.8 Extra Materials

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied, and that are packaged for storage and identified with labels describing contents. Deliver extra materials to Owner.
 1. Quantity: Furnish an additional 3 percent, but not less than 1 gal. of each material and color applied.
- B. Excess Materials: In addition to extra materials noted above, turn over unused paint and finish materials to the Owner's representative. Package materials with protective covers for storage and identify with labels describing contents and color.
- C. Provide a typed list of extra and excess materials and turn over to the Owner's representative.

PART 2 – PRODUCTS

2.1 Acceptable Manufacturers

- A. Materials selected for coating systems for each type surface shall be the product of a single manufacturer. Except as otherwise specified, materials shall be the products of the following manufacturers:
 1. Benjamin Moore
 2. Duron
 3. Glidden Professional and Devoe Coatings
 4. Porter
 5. PPG
 6. Sherwin Williams
- B. Exterior concrete textured coating is specified in Section 09 9035.
- C. **Note:** All coatings must comply with current VOC regulations.

2.2 Paints and Coatings – General

- A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
 1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 2. Supply each coating material in quantity required to complete entire project's work from a single production run.

3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Volatile Organic Compound (VOC) Content:
1. Provide coatings that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D – National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - b. Architectural coatings VOC limits of State in which the project is located.
 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- D. Coating Material Compatibility: Provide block fillers, primers, under-coaters, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience
- E. Material Compatibility:
1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- F. Chemical Components of Field-Applied Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions; these requirements do not apply to primers or finishes that are applied in a fabrication or finishing shop:
1. Flat Paints and Coatings: VOC content of not more than 100 g/L.
 2. Non-Flat Paints and Coatings: VOC content of not more than 150 g/L.
 3. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 4. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein.
 - b. Acrylonitrile.
 - c. Antimony.
 - d. Benzene.

- e. Butyl benzyl phthalate.
- f. Cadmium.
- g. Di (2-ethylhexyl) phthalate.
- h. Di-n-butyl phthalate.
- i. Di-n-octyl phthalate.
- j. 1,2-dichlorobenzene.
- k. Diethyl phthalate.
- l. Dimethyl phthalate.
- m. Ethylbenzene.
- n. Formaldehyde.
- o. Hexavalent chromium.
- p. Isophorone.
- q. Lead.
- r. Mercury.
- s. Methyl ethyl ketone.
- t. Methyl isobutyl ketone.
- u. Methylene chloride.
- v. Naphthalene.
- w. Toluene (methylbenzene).
- x. 1,1,1-trichloroethane.
- y. Vinyl chloride.

2.3 Paint Systems – Interior – Low VOC

- A. Masonry, Opaque, Latex, 3 Coat: (Low VOC)
 - 1. One coat of block filler.
 - a. Benjamin Moore: Eco Spec Interior Latex Primer Sealer 231 (0 g/L VOC).
 - b. Glidden: 3010-1200 Blockfiller (<100 g/L VOC).
 - c. Porter: PPG 6-7 Speedhide Acrylic Latex Block Filler (14 g/L VOC).
 - d. PPG: PPG 6-7 Speedhide Acrylic Latex Block Filler (14 g/L VOC).
 - e. Sherwin Williams: S-W Loxon Acrylic Masonry Primer, A24W8300.
 - 2. Semi-gloss: Two coats of latex enamel;
 - a. Benjamin Moore: Eco Spec Interior Semi-Glass Enamel 224 (11 g/L VOC).
 - b. Glidden: 9200 Lifemaster No VOC Semi-Gloss Interior (0 g/L VOC).
 - c. Porter: PP6139 Pro Master 2000 Latex Semi-Gloss Enamel (108 g/L VOC).
 - d. PPG: PP6139 Pro Master 2000 Latex Semi-Gloss Enamel (108 g/L VOC).
 - e. Sherwin Williams: S-W ProMar 200 Zero VOC Latex Semi-Gloss.
- B. Ferrous and Galvanized Metals, Primed, Acrylic Enamel, 2 Coat: (Low VOC)
 - 1. Touch up with acrylic primer.
 - a. Benjamin Moore: Super Spec HP, Acrylic Metal Primer

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- b. Glidden: 4020-1000 Devflex DTM primer (91 g/L VOC).
 - c. Porter: PPG 90-712 Pitt Tech DTM Acrylic Metal Primer (123 g/L VOC).
 - d. PPG: 90-712 Pitt Tech DTM Acrylic Metal Primer (123 g/L VOC).
 - e. Sherwin Williams: B66-310 Series Pro Industrial ProCryl Universal Primer.
2. Semi-gloss: Two coats of acrylic enamel;
 - a. Benjamin Moore: M29 I.M>C> DTM 100% Acrylic Semi-Gloss Enamel
 - b. Glidden: 9200 Lifemaster No VOC Semi-gloss Interior (0 g/L VOC)
 - c. Porter: 90-1210 PittTech Plus DTM Waterborne Acrylic Semi-Gloss (90 g/L VOC).
 - d. PPG: 7-374 Pittsburgh Paints Semi Gloss Acrylic Metal Finish (82 g/L VOC).
 - e. Sherwin Williams: B42 Series Metalatex Semi-Gloss
- C. Gypsum Board, Latex-Acrylic, 3 Coat: (Low VOC)
1. One coat of latex primer sealer.
 - a. Benjamin Moore: Pristine Eco Spec Interior Primer 231.
 - b. Glidden: 3210 Gripper Primer (<100 g/L VOC)
 - c. Porter: PP867 Pro Master 2000 Latex Primer Sealer
 - d. PPG: 6-2 Speedhide Latex Primer Sealer (<50 g/L VOC)
 - e. Sherwin Williams: B28W2600 ProMar 200 Zero VOC Latex Primer.
 2. Eggshell: Two coats of latex-acrylic enamel;
 - a. Benjamin Moore: Eco Spec Acrylic Latex Eggshell Enamel 223.
 - b. Glidden: 9300 – Lifemaster No VOC Eggshell Interior (0 g/L VOC).
 - c. Porter: PP6129 Pro Master 2000 Latex Eggshell Enamel (66 g/L VOC).
 - d. PPG: 6-411 Speedhide Latex Eggshell Enamel (<50 g/L VOC).
 - e. Sherwin Williams: B20WZ2600 ProMar 200 Zero VOC Latex Eg-Shel.

2.5 Accessory Materials

- A. Accessory Materials: Provide all primers, sealers cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.
- B. Patching Material: Latex filler.
- C. Fastener Head cover Material: Latex Filler.

PART 3 - EXECUTION

3.1 Examination

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application. Application of primers, paints, stains or finishes represents acceptance by the contractor that the surfaces were properly prepared and suitable for application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.
 - 2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.

3.2 Preparation

- A. Clean surfaces thoroughly and correct defects prior to coating application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Surfaces: Correct defects and clean surfaces which affect work of this section. Remove or repair existing coatings that exhibit surface defects.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
- H. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.
- I. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- J. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are

evident, remove by hand wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

- K. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- L. Metal Doors to be painted: Prime metal door top and bottom edge surfaces.

3.3 Application

- A. Apply products in accordance with manufacturer's instructions.
- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance.
- D. Dark Colors and Deep Clear colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- E. Apply paint, enamel, stain and varnish with suitable brushes, rollers or spraying equipment.
 - 1. Rate of application shall not exceed that as recommended by paint manufacturer for the surface involved.
 - 2. Keep brushes and rollers and spraying equipment clean, dry, free from contaminates and suitable for the finish required.
 - 3. Apply stain by brush.
- F. Finish coats shall be smooth, free of brush marks, streaks, laps or pile up of paints and skipped or missed areas.
- G. Leave all parts of moldings and ornaments clean and true to details with no undue amount of paint in corners and depressions.
- H. Make edges of paint adjoining other materials or colors clean and sharp with no overlapping.
- I. Change colors at corner of stop where colors differ between adjoining spaces or rooms and where door frames match wall colors.
- J. Where portion of finish or drywall partition is damaged or unacceptable, refinish entire surface of partition.
- K. Back-prime exterior carpentry and millwork with material specified for prime coat, without runs on face. Finish cut edges just prior to installation.

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- L. Finish all edges of exterior doors same as faces.
- M. The number of coats specified are minimum. The Contractor shall provide at no additional cost to the Owner, as many coats as necessary for color coverage conformity and uniform appearance.
- N. Sand metal surfaces lightly between coats to achieve required finish.
- O. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 Cleaning

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.5 Protection

- A. Protect finished coatings until completion of project.
- B. Touch up and restore finish where damaged. Remove spilled, splashed or splattered paint from all surfaces.
- C. Do not mar surface finish of item being cleaned.

END OF SECTION