Alice Ward Library
Carriage House Rehabilitation

27 Park St. | Canaan, VT 05903

BID PROJECT MANUAL

01.20.26

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(802) 266-7135
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PROJECT MANUAL

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REQUEST FOR PROPOSALS
General Contractor Services

Project: Alice M. Ward Memorial Library: Carriage House Renovations
Location: Canaan, VT
Date: 20 January 2026

The Town of Canaan (OWNER), Vermont is soliciting proposals from interested persons or firms for General Contractor services for the renovation of the Carriage House attached to the Alice M. Ward Memorial Library, a historic municipal building located 27 Park St., Canaan, VT as described herein. Architectural drawings and specifications will be provided under separate cover and are incorporated by reference. In submitting proposals, please address all items below, including any relevant information regarding your firm and the proposal. Any proposal not responding to all items directed below will be considered as incomplete and discarded without further review.

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The following selection process is to enter into a contract with a General Contractor to provide on-call services that will include but not be limited to:

- Full general contracting services and supervision, and;
- Construction scheduling and updates, and;
- Sub-contractor procurement and selection, and;
- Construction oversight, coordination, and monitoring, and;
- Scheduling and coordinating regular (weekly/bi-weekly) project meetings, and;
- Submittals and shop drawing management, and;
- Site logistics, safety, and quality control, and;
- Closeout documentation and warranties.

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1. **PROJECT OVERVIEW**

   The expansion of the Alice M Ward Memorial Library aims to enhance its capacity to serve the community by accommodating more patrons, offering additional services, and providing additional space for learning, collaboration, and accessing internet and print resources. The expansion project will develop and renovate the Carriage House attached to the existing building, upgrade some existing spaces, and incorporate new features to meet the evolving needs of library users.

   After the renovation project, this historic building will meet ADA standards and will provide multiple accessibility features for people with physical disabilities. Additionally, the computer space within the library will be fully accessible, featuring adjustable desks, accessible seating arrangements, and computer stations designed to accommodate individuals with disabilities, improving internet access. Finally the renovation project will increase the building's energy efficiency by converting the entire building to electric air-source heating and installing a robust building envelope in the Carriage House.

   The Project includes selective demolition, historic building rehabilitation, building envelope improvements, accessibility upgrades, interior renovations, mechanical/electrical/plumbing upgrades, and minor related site work as defined in the Architect's Package.

   This project and related contract will be approached and governed using an **AIA Document *A101-2017 - Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum***. The contract shall require mutually acceptable modifications and amendments to comply with the intent of this request for proposal and to suit the needs of the Owner and Contractor. This project has outside funding requirements including Vermont Department of Library Treasury Funding and other sources. This project is *NOT* subject to either Davis-Bacon wage rates or the Build America, Buy America Act (BABAA) requirements.

2. **PROJECT TEAM**

Architect:	Ryan Edwards, Principal - R. Edwards and Company
Engineering:	Engineering Ventures PC, Structural Engineer
	DuBois & King, Inc. - MEP Engineering
Estimator:	Tom Barden, Barden Inspection & Consulting Services, Inc.
Owner:	Town of Canaan, VT
Development Consultant:	Peder Rude - North Hill Solutions, Ltd. Co.

3. **GENERAL PROVISIONS**

This request for proposals, including attachments, amendments, or addenda are subject to the rights reserved by the Owner, but not limited by their right to:

- reject any or all proposals in response to this RFP;
- withdraw this RFP at any time, at the Owner's sole discretion and best interest;
- make an award from any resulting contract associated with this RFP, in whole or in part;
- disqualify any proposer whose conduct and/or proposal fails to conform to the requirements set out within this RFP;
- seek clarifications and/or revisions of any proposal submitted in response to this RFP;
- use any or all information gathered through the RFP process, as well as potential interviews and background checks to confirm a proposer's qualifications, experience, abilities and/or financial standing;
- prior to final selection by the Owner, direct proposers to submit modifications addressing subsequent amendments or addenda to the RFP;
- update or modify RFP and/or project dates;
- waive any non-material requirements;
- negotiate final contract terms at the Owner's sole discretion;
- any and all information, documents, or other material submitted in response to this RFP shall be non-confidential and/or non-proprietary in nature;
- utilize or adopt any or all ideas in submitted proposals;
- make any non-material revisions to the Scope of Work following receipt of proposals, if it is in the Owner's best interest to do so;
- It is the responsibility of the General Contractor to ensure all construction complies with applicable local, state, and federal code requirements;
- All necessary permits are the responsibility of the General Contractor, a copy of which shall be presented to the Owner or their representative prior to construction;
- All dimensions to be field verified.

The Owner is not liable or responsible in any way for any expense incurred in the preparation of a proposal in response to this RFP. All proposals submitted in response to this RFP become property of the Owner.

4. **PROJECT SCHEDULE**

RFP Issue Date	20 January 2026
Deadline to submit questions on RFP	12:00 PM, 6 February 2026
Proposal Submission deadline	12:00 PM, 17 February 2026
Mandatory Site visit	26 - 30 January 2026 (details below)
Interviews	TBD, if needed (February 2025)
Selection of firm / individual	17 February 2026
State permits	TBD
Begin Construction	Anticipated April 2026
Anticipated Completion	October 2026

5. **ISSUED DOCUMENTS**

- This RFP
- Architect's Drawings and Specifications (separate)
- Addenda, if issued

6. **SCOPE OF WORK**

The proposal shall include all services required during the Construction phase. The General Contractor shall:

1. Manage and coordinate all aspects of construction in accordance with AIA Document *A101-2017 - Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum*. All realized savings from the project will accrue to the Owner.
2. Develop, with the Owner or their representative, an understanding of the construction schedule and necessary sequencing.
3. All subcontractors are subject to Owner's approval.
4. Provide a high level of Project Management to complete the project in accordance within the agreed schedule, budget and quality standards expected by the Owner and team.
5. Provide a monthly cost breakdown to track costs. The schedule of values shall delineate work complete as well as the estimated cost to complete for each construction component.
6. Provide a monthly schedule highlighting the critical path activities.
7. Carefully manage all change orders and project submittals.
8. Advise the Owner or their representative and architect of anticipated changes in the project's scope, cost, or schedule, and make recommendations as to how to remedy the resultant effects.
9. Provide oversight and coordination of quality assurance, testing and inspecting programs.
10. Develop and implement a work safety program.
11. Prepare and distribute the following work products:
    a. Construction Meeting Minutes (pre-construction meeting minutes by architect);
    b. Sample Logs;

c. Change Proposal Logs;
d. Change Order Logs;
e. Field Observation Memoranda;
f. Testing and Inspection Logs;
g. Monthly Status Reports;
h. Monthly Construction Cost Reports;
i. Daily Construction Progress Logs;

7. **MANDATORY SITE VISIT**

Due to the nature of the project, a site visit is required of all Contractors interested in submitting a proposal. Furthermore, due to the location of the project, scheduling a site visit shall be the sole responsibility of an interested Contractor. A site visit MUST be scheduled and occur during regular business hours during the **week of Monday, 26th January through Friday, 30th January 2026**. Please contact the following person to schedule a site visit:

Georgiana Carr, Library Trustee
Phone: 802.355.9105

8. **COST PROPOSAL**

All costs and amounts as described in Appendix B must be provided without conditions, omissions, alterations, or any additional items not called for therein, within the scope of work, or architect's documents. Any information, alterations, or irregularities may be cause for rejection of a proposal.

9. **PAYMENT TERMS**

Monthly progress payments, retainage, and change order procedures will be defined in the Owner–Contractor Agreement.

10. **SUBMISSION FORMAT AND REQUIREMENTS**

Use of Appendices A and B are required. Submissions without said forms will be deemed as reason for proposal rejection. The following qualifications and requirements are outlined here for illustrative purposes as to Contractor expectations.

a. Minimum Qualifications:
   i. Proposer must be lawfully authorized to do business in the state of Vermont and have a Certificate of Good Standing for the calendar year;
   ii. Proposer must have a minimum of ten years experience in general contracting services;

b. General Experience & Project References:
   i. Prior experience with municipal projects, highly valued but not required;
   ii. Prior experience with projects renovating and updating listed historic structures;
   iii. Overall experience as a general contractor.

c. Organization:

i. Resumes for key project staff, including roles/titles. Be prepared for key personnel to attend an interview, if required;

ii. A description of your approach to the project as defined within the RFP, including but not limited to: establishment of lump sum, selection of trade contractors, handling of change orders, submittals, RFI's, and construction process;

iii. Please outline the communication procedures, meeting schedules, and schedule tracking procedures which you employ on this type and size of project;

iv. A letter from the firm's insurance carrier indicating ability to acquire a 100% performance and payment bond.

v. An estimated draw schedule for each month of construction.

d. Sub-contractor list:

See Appendix A.

e. Procedures:

i. Please describe the pre-qualification and/or bidding procedures your firm uses to secure subcontractors to assure your clients of the best cost and value that you will provide.

ii. Please submit examples of your billing and accounting procedures to demonstrate project status to the client.

iii. Please describe your firm's approach to on site safety and provide a current, written copy of your "Experience Modification Rate" signed by your insurer.

iv. Please describe your approach to quality assurance.

v. Please provide evidence and references of warranty response.

f. Schedules:

i. A summary of permitting and construction schedules, including suggestions for expediting the construction process, material lead times, final project completion, and an estimated invoicing draw schedule.

g. Proposed Fees:

i. Lump sum: A fixed fee for construction services. Construction services shall include all items outlined in the Cost Matrix in Appendix B.

- Please describe the process by which you come to a final Lump Sum.
- In light of the Lump Sum, describe how the firm manages accounting during the project.
- Explain how change orders are generated and costed out in relation to the agreed upon lump sum and any associated markup, including Add and Deduct items.
- Explain General Conditions as a component of the Lump Sum fee.
- Percentage to be added to the cost of the work for providing a 100% performance and payment bond.

- A statement on the basis by which GC owned equipment, leased equipment, and small tools will be charged to the job.
- A statement on how contingency accounts within the Lump Sum will be used. 100% of unused contingency shall be returned to the owner.
- A statement regarding the markup that applies to change orders.

ii. Labor Rates: Description of labor rates, using a fee schedule as a component of the Lump Sum fee.

h. Insurance:

i. Copies of Commercial General Liability Insurance shall not be less than:
- $1,000,000 per occurrence
- $2,000,000 general aggregate per project basis
- $2,000,000 products/completed operations aggregate

ii. Automobile Liability Insurance

iii. Workers' Compensation, Employer's Liability, & Disability Insurance not less than Vermont State minimums

iv. All subconsultants shall be required to obtain and maintain all of the same insurances listed in this section prior to commencement of any work.

v. Additional coverage: The Owner reserves the right to require additional coverage and/or alter the minimum required coverage amounts in whole or in part for the project or specific Job Orders on a case-by-case basis. The proposer must incorporate the increased costs, if any, in their Job proposals.

i. Submission Format:

i. All submissions shall be in PDF format and submitted electronically via email or file transfer link (ex: Dropbox or Google Drive) on or before the deadline herein.

11. **QUESTIONS AND ADDENDA**

All questions must be submitted in writing. Respondents shall restrict all contact and/or questions to the individuals listed below in Section 18 of this RFP. Any clarifications or corrections of this RFP that materially affect or change its requirements will be issued by the Owner as an addendum. All such addenda issued by the Owner prior to the proposal due date shall be considered a full part of this RFP and all respondents shall acknowledge receipt of and incorporate the addendum into their proposal. Clarifications or corrections issued in any other form, including oral statements, will not be binding and the Owner shall not be relied upon in preparing a proposal.

12. **PROPOSAL EVALUATION CRITERIA**

A contract will be awarded to the highest technically rated proposer whose proposal is determined to be the most responsive and in the best interests of the Owner and can provide the most value for service to accomplish the project. Selection will be based on the following weighted criteria:

WEIGHTED SCORING CRITERIA		
Experience	Firm's overall qualifications & experience.	20%
Historic renovation	Descriptions of the firm's experience and procedures in renovating and redevelopment of historic structures in Vermont and compliance with applicable requirements and laws.	25%
Organization	Description of the firm's proposed staffing, and communication procedures as directed herein.	20%
Cost Proposal	Complete description of firm's cost structure as defined herein.	25%
References	Interview of no less than three references on projects of similar size and scope completed within the past five years.	10%
Interview	**TBD** - If more than one finalist is chosen, interviews may be held at the Owner's discretion.	

The Owner is not legally obliged to select the lowest proposal and reserves the right to select the contractor deemed to best perform this work and fulfill the interests of the Town. All submitted materials will be reviewed prior to the Selectboard choosing a contractor for the project. All proposals, upon submission, become property of the Owner. This RFP does not commit the Owner to award a contract, to pay any costs incurred in proposal preparation, or to pay for all goods and/or services offered in a proposal. The Owner reserves the right to negotiate all final details of a contract with the selected contractor, should one be chosen, if it is in the best interest of the Owner to do so.

13. **LITIGATION PROCEEDINGS**

Please provide an adequate response if the firm, or Principals of the firm have been involved in litigation on a project within the last five (5) years, including but not limited to: narrative description, identification of all parties involved, and the current status or resolution of the named dispute.

14. **PROPOSAL DEADLINE AND VALIDITY**

Proposals are due no later than ***17 February 2026 at 12:00pm*** and are to be valid for acceptance for no less than 90 days beginning on the submittal deadline. The accepted proposal shall remain valid for the life of the Contract resulting from this selection process, unless amended in writing and mutually agreed by both parties.

15. **WITHDRAWAL OR MODIFICATIONS**

A proposal may be withdrawn or resubmitted at any time prior to the set time for receipt of proposals as defined above. No proposal may be changed, amended, or modified in any way after the deadline. Proposals may only be withdrawn after the submission deadline by written request, clearly stating the reasons for withdrawal and receipt of a written acceptance from the Owner or their representative.

16. **ACCEPTANCE OF EVALUATION METHODS**

Submission of a proposal indicates the respondent's acceptance of the evaluation techniques and understanding of the subjective judgements that must be made by the Owner during the evaluation process to select a final candidate.

17. **TERMINATION**

a. If, through any cause, the contractor shall fail to fulfill in a timely and proper manner obligations under the contract or if the contractor shall violate any of the requirements of the contract, the Owner shall there upon have the right to terminate the contract by giving written notice to the contractor of such termination and specifying the effective date of termination. Such termination shall relieve the Owner of any obligation for balances to the contractor of any sum or sums set forth in the contract. The Owner will pay only for goods and services accepted prior to termination.
b. Notwithstanding the above, the contractor shall not be relieved of liability to the Owner for damages sustained by the Owner by virtue of any breach of the contract by the contractor and the Owner may withhold any payments to the contractor for the purpose of compensation until such time as the exact amount of the damage due the Owner from the contractor is determined.
c. The contractor agrees to indemnify and hold harmless the Owner from any liability to subcontractors/suppliers concerning payment for work performed or goods supplied arising out of the lawful termination of the contract by the Owner under this provision.
d. In case of default by the contractor, the Owner may procure the goods or services from other sources and hold the contractor responsible for any excess cost.
e. It is understood by all parties that if, during the life of the contract, the contractor disposes of his/her business concern by acquisition, novation, merger, sale and/or transfer or by any means convey his/her interest(s) to another party, all obligations are transferred to that new party. In this event, the new owner(s) will be required to submit all documentation/legal instruments that were required in the original bid/contract. Any change shall be approved by the Owner and may be grounds for termination of contract.
f. The contractor will not assign any interest in the contract and shall not transfer any interest in the same without the prior written consent of the Owner.
g. The Owner may terminate the contract for convenience by providing thirty (30) calendar days advanced notice to the contractor.
h. The contractor shall maintain all documentation related to products, transactions or services under this contract for a period of three (3) years from the date of final payment. Such records shall be made available to the Owner or project funders upon request.
i. Neither party shall be responsible for any resulting loss or obligation to fulfill duties as specified in any of the terms or provisions of a contract if the fulfillment of any term or provision of the contract is delayed or prevented by any

revolutions, insurrections, riots, wars, acts of enemies, national emergencies, strikes, floods, fires, or by any cause not within the control of the party whose performance is interfered with which by the exercise of reasonable diligence such party is unable to prevent. Additionally, if the fulfillment of any of the terms and provisions of the contract is delayed or prevented by any court order, or action or injunction or other such agreement, the contract shall become voidable by the Owner by notice to the parties

j. Public funds may be used to pay only for goods delivered or services rendered. The Owner shall not pay penalties and/or interest on overdue bills unless otherwise required by law. No employee is authorized to sign a letter of credit or any other document that represents a legal commitment on the part of the Owner to pay additional fees.
k. The Owner shall retain all of its rights and interest in any and all documents and property both hard copy and digital furnished by the Owner to the successful bidder (contractor) for the purpose of assisting the contractor in the performance of the contract. None of the documents and/or property shall, without the written consent of the Owner or their representative, be disclosed to others or used by the contractor or permitted by the contractor to be used by their parties at any time except in the performance of the resulting contract.
l. The contractor shall not have the right to use, sell, or disclose the total of the interim or final work products, or make available to third parties, without the prior written consent of the Owner or their representative.

18. **CONTACT**

Peder Rude
Development Consultant, North Hill Solutions Ltd. Co.
802.829.2900
hello@northhill.solutions

Ryan Edwards
Project Architect, R. Edwards & Co.
redwards@redwardsandcompany.com

APPENDIX A

PROPOSAL SUBMISSION FORM

Registered Business Name: _____
Vermont Certificate of Good Standing: Attach as separate document
Owner and/or Primary Contact: _____
Phone #: _____
Email: _____

GENERAL EXPERIENCE

- **Number of years experience as General Contractor:** _____

- **Relevant Experience & References:** Attach as separate documents, provide a list of at least three (3) and no more than five (5) similar projects, which best illustrate the firm's experience on related work and the work completed as contractor on each project. Include a list of current staff who are being assigned to this project. List work on municipal projects before other examples. A minimum of one reference must be for work on a historic building. Each project must include the following information:
    - Name and location (or municipality) of the project,
    - The nature of the firm's responsibility on this project,
    - Project owner's representative name, address and phone number,
    - Date project was completed or is anticipated to be complete,
    - Size of project
    - Estimated cost of project (construction cost),
    - Completed cost of project,
    - Self performed work,
    - Present status of the project

- **Historic Renovation Experience:** Describe your firm's experience in undertaking and successfully completing projects of listed, historic buildings. A non-response or a response of no experience may be deemed as grounds for proposal disqualification.

- **Your organization and key staff:**
  As separate documents, include the following:
    - Resumes for key project staff, including roles/titles. Be prepared for key personnel to attend an interview, if required;

19. Sub-contractor List:

a. Plumbing

i. Business Name: _____

ii. Primary Contact: _____

iii. Phone #: _____

b. Mechanical / HVAC

i. Business Name: _____

ii. Primary Contact: _____

iii. Phone #: _____

c. Electrical

i. Business Name: _____

ii. Primary Contact: _____

iii. Phone #: _____

d. Other (List) _____

i. Business Name: _____

ii. Primary Contact: _____

iii. Phone #: _____

- Please describe the pre-qualification and/or bidding procedures your firm uses to secure subcontractors to assure your clients of the best cost and value that you will provide.

- As separate documents, Please submit examples of your billing and accounting procedures to demonstrate project status to the client.

- Please describe your firm's approach to on site safety and provide a current, written copy of your "Experience Modification Rate" signed by your insurer.

- Please describe your approach to quality assurance.

- As separate, attached documents, provide evidence and references of warranty response.
- As separate, attached documents, provide:
    - A summary of permitting and construction schedules, including suggestions for expediting the construction process,
    - Material lead times,
    - Final project completion,
    - An estimated invoicing draw schedule.
- As separate, attached documents, copies of all insurance requirements as defined in Section 10, Subsection (h) of the RFP.

APPENDIX B

COST PROPOSAL:

DIVISION OR CATEGORY	BID in $	NOTES
01 General Requirements		
02 Existing Conditions		
03 Concrete		
05 Metals		
06 Wood, Plastics, & Composites		
07 Thermal & Moisture Protection		
08 Openings		
09 Finishes		
10 Specialties		
11 Equipment		
14 Conveying Equipment		
22 Plumbing		
23 Heating Ventilating & Air Conditioning		
26 Electrical		
27 Communications		
31 Earthwork		
General conditions		
Overhead & Profit		
Permitting		
Bonding		
Power company fees		
Field office / On-site storage		
Rubbish, recycling & clean-up fees		

Temporary job site safety & protections		
Temporary Services		
Building Commissioning		
Contractor’s contingency 5%		
TOTAL BID IN NUMBERS	$	
TOTAL BID IN WORDS		

20. Please describe the process by which you come to a final Lump Sum.

21. In light of the Lump Sum, describe how your firm manages accounting during a project.

22. Explain how change orders are generated and costed out in relation to the agreed upon lump sum and any associated markup, including Add and Deduct items.

23. Explain General Conditions as a component of the Lump Sum fee.

24. A statement on the basis by which GC owned equipment, leased equipment, and small tools will be charged to the job.

25. A statement on how contingency accounts within the Lump Sum will be used. **100% of unused contingency shall be returned to the owner.**

26. A statement regarding the markup that applies to change orders.

27. Description of labor rates, using a fee schedule as a component of the Lump Sum fee.

SECTION 011000
GENERAL REQUIREMENTS

1.1 General Provisions
1.2 Project Requirements
1.3 Specification Information
1.4 Definitions
1.5 Industry Standards
1.6 Codes and Regulations
1.7 Progress Schedule
1.8 Schedule of Values
1.9 Payment Requests
1.10 Procedures and Controls
1.11 Submittals
1.12 Warranties
1.13 Cutting and Patching
1.14 Temporary Facilities and Utilities
1.15 Products and Substitutions
1.16 Delivery, Storage and Handling
1.17 Owner-Furnished (OFCI) Products
1.18 Labels
1.19 Record Documents
1.20 Project Closeout
1.21 Final Cleaning and Repair

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to all Sections and Documents within DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.

1.2 PROJECT REQUIREMENTS

A. Project Identification: Alice Ward Memorial Library Carriage House Rehabilitation, 27 Park St., Canaan, VT 05903.

B. Particular Project Requirements:

a. Prior or concurrent work by Owner or others: As indicated.
b. Pre-purchased and pre-ordered items: As indicated.
c. Owner-purchased, Owner-installed items: As indicated.
d. Owner-purchased, Contractor-installed items: As indicated.

C. Project Requirements for Temporary Utilities and Facilities:

a. Utility Costs: The Owner will allow the use of existing utility systems and pay for cost of utility services consumed, including electricity, water and gas. Do not waste. The Contractor shall provide temporary heat prior to the complete enclosure of the building and availability of suitable permanent systems.
b. Temporary Offices: A separate field office for the Architect and the Owner's Representative is not required.
c. Toilet Facilities: The Contractor shall provide and maintain temporary toilets outside the building.

D. Permits, Fees, and Inspections:

a. Local Permits: Owner is responsible to apply for, obtain, and pay for all local permitting as required.

b. State Permits: Owner is responsible to apply for, obtain, and pay for all state permitting.

    i. State Construction Permit: The Architect will transmit Application, transmit Contract Documents and review project with the Authority Having Jurisdiction (AHJ). The Owner will pay for and obtain the permit.

c. The Contractor is responsible to apply for, obtain and pay for all other necessary permits, fees, excavation fees, inspections, etc. as may be required by these drawings, specifications, building code or any other laws and requirements applicable to this project.
d. Subcontractors are responsible to apply for, obtain and pay for any permits specifically related to their work.
e. The Contractor is responsible for coordinating the requirements, scheduling all inspections required and securing the Certificate of Occupancy.
f. Electric power charges for the cost of bringing power to the site by the utility company are paid for by Owner. All other power company charges, including for temporary power, are the responsibility of the Contractor.
g. All permanent meter hookup fees are by Owner.

E. Codes: Comply with applicable codes and regulations of authorities having jurisdiction. Submit copies of inspection reports, notices and similar communications to Architect.

F. Dimensions: Verify dimensions indicated on drawings with field dimensions before fabrication or ordering of materials. Do not scale drawings.

G. Existing Conditions: Notify Architect of existing conditions differing from those indicated on the drawings.

H. Contractor’s Conduct on Premises: The Contractor and their employees shall behave in a respectful, courteous and safe manner. Abusive, harassing, and lewd behavior is prohibited. Music playing is prohibited. Alcohol, tobacco, and drug use is prohibited.

1.3 SPECIFICATION INFORMATION

A. These specifications are a specialized form of technical writing edited from master specifications and contain deviations from traditional writing formats. Capitalization, underlining and bold print is only used to assist reader in finding information and no other meaning is implied.

B. Except where specifically indicated otherwise, the subject of all imperative statements is the Contractor.

C. Sections are generally numbered in conformance with Construction Specifications Institute Masterformat System. Numbering sequence is not consecutive. Refer to the Table of Contents for names and numbers of sections included in this Project.

D. Pages are numbered separately for each section. Each section is noted with "End of Section" to indicate the last page of a section.

1.4 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.5 INDUSTRY STANDARDS

A. Referenced standards are part of the Contract Documents and have the same force and effect as if bound with these specifications.

B. Except where specifically indicated otherwise, comply with the current standard in effect as of the date of the Owner/Contractor Agreement. Obtain copies of industry standards directly from publisher.

C. The titles of industry standard organizations are commonly abbreviated; full titles may be found in Encyclopedia of Associations or consult Architect.

1.6 CODES AND REGULATIONS

A. Comply with all applicable codes, ordinances, regulations and requirements of authorities having jurisdiction.

B. Submit copies of all permits, licenses, certifications, inspection reports, releases, notices, judgments, and communications from authorities having jurisdiction to the Architect.

1.7 PROGRESS SCHEDULE

A. Provide comprehensive bar chart schedule showing all major and critical minor portions of the work, sequence of work and duration of each activity. Update and reissue regularly, but not less than monthly.

1.8 SCHEDULE OF VALUES

A. Prepare Schedule of Values to coordinate with application for payment breakdown. Submit at least 10 days before first payment application. Update and reissue regularly, but not less than monthly.

1.9 PAYMENT REQUESTS

A. Provide three copies of each request on completely filled out copies of AIA G702 and continuation sheet G703. Substantiate requests with complete documentation; include change orders to date. Provide partial lien waivers for work in progress and full lien waivers for completed work.

B. As-Constructed Record Drawing Certification: Certify as a part of each application for payment that the project as-constructed record documents are current at the time of application is submitted. The Contractor shall require such drawings to be current as a condition of approving any payment to the trade Contractor and Subcontractor.

C. Before first payment application, provide the following:

a. List of subcontractors, suppliers and fabricators.
b. Schedule of values.
c. Progress schedule.
d. Submittal schedule keyed to project schedule.
e. List of Contractor's key project personnel.
f. Copies of permits and other communications from authorities.
g. Contractor's certificate of insurance.
h. Performance and payment bonds if required.
i. Unit price schedule.

D. Before final payment application, provide and complete the following:

a. Complete closeout requirements.
b. Complete punch list items.
c. Settle all claims.
d. Transmit record documents to Architect. Include statement that Architect’s Supplemental Instructions, Change Orders, Construction Change Directives and minor changes in the work have been incorporated in the as-constructed record drawings.
e. Prove that all taxes, fees and similar obligations have been paid.
f. Remove temporary facilities and surplus materials.
g. Change lock cylinders or cores.
h. Clean the work.
i. Submit consent of surety, if any, for final payment.

1.10 PROCEDURES AND CONTROLS

A. Project Meetings: Arrange for and attend meetings with the Architect and such other persons as the Architect requests to have present. The Contractor shall be represented by a principal, project manager, general superintendent or other authorized main office representative, as well as by the Contractor's field superintendent. An authorized representative of any subcontractor or sub-subcontractor shall attend such meetings if the representative's presence is requested by the Architect. Such representatives shall be empowered to make

binding commitments on all matters to be discussed at such meetings, including costs, payments, change orders, time schedules and manpower. Any notices required under the Contract may be served on such representatives. Written reports of meeting minutes shall be prepared by the Contractor and distributed by the Contractor to attendees, the Architect, and Owner within three business days.

a. Pre-Construction Conference: Attendance by Architect, Contractor, major subcontractors. Agenda shall include: Quality of workmanship, coordination, interpretations, job schedule, submittals, approvals, requisition procedures, testing, protection of construction, indoor air quality, and construction waste management.
b. Exterior Envelope Meeting: Attendance by Architect, Contractor, major subcontractors. Agenda shall include as applicable: Review of exterior wall details, wall construction, sample panel preparation, cleaning, control and expansion joints, cold weather procedures.
c. Interior Finishes Meeting: Attendance by Architect, Contractor, major subcontractors. Agenda shall include as applicable: Quality of workmanship, environmental conditions for application of finishes, drywall details, millwork details, condition of surfaces to receive finishes, tile work, painting work, samples and test areas and approvals, coordination with mechanical and electrical interfaces and penetrations, indoor air quality.
d. Progress Meetings: Hold regularly before preparation of payment requests and additional meetings as requested by the Architect. Attendance by Architect, Contractor, and others as determined by Contractor. Agenda shall include work in progress and payment requests.
e. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction, as specified. Preinstallation Conferences may be part of Progress Meeting agenda. Attendance by Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow. Agenda shall include a review of progress of other construction activities and preparations for the particular activity under consideration.

B. Emergency Contacts: Furnish the Owner and Architect, in writing, the names and telephone numbers of individuals to be contacted in the event of an out-of-hours emergency at the building site. Post a similar list readily visible from the outside of the field office or a location acceptable to the Architect.

C. Layout: Layout work and be responsible for all lines, elevations, and measurements of the building, grading, utilities and other work executed under the contract. Retain a registered professional engineer or registered land surveyor, acceptable to the Architect, to initially establish exterior lines and required elevations of all buildings and structures to be erected on the site. The registered professional engineer or registered land surveyor shall certify the actual location of the constructed facilities in relation to property lines, building lines, easements, set- backs, and other restrictive boundaries.

D. Field Measurements: Verify measurements at the building prior to ordering materials or commencing work. No extra charge or compensation will be allowed because of differences between actual dimensions and measurements indicated on the Drawings. Differences which may be found shall be submitted to the Architect for decision before proceeding with the work.

E. Field Measurements for Fixed Equipment: Dimensions for fixed equipment to be supplied under this Contract or separate contracts shall be determined by field measurements taken

jointly by the Contractor and the equipment supplier involved. A record of the field measurements shall be kept until time of substantial completion of the project, or until the equipment has been fully installed and accepted by the Owner, whichever is later. Responsibility for fixed equipment fabricated accurately to field measurements for proper fit and operation shall be that of the Contractor. Contractor shall pay all costs involved in correcting any misfitting fixed equipment as fabricated.

F. Project Limit Line: The boundaries of the site do not limit the responsibility of the Contractor to perform the work in its entirety. Make utility connections as indicated.

G. Matching: Where matching is indicated, the Architect shall be the sole and final judge of what is an acceptable match. Mockups and sample submissions are required.

H. Observation: Notify the Architect and authorities having jurisdiction at least thirty-six hours in advance of concealing any work.

I. Utilities: Prior to interrupting utilities, services or facilities, notify the utility owner and the Owner and obtain their written approval a minimum 48 hours in advance.

J. Furnishings, Fixtures, and Equipment: Cooperate and permit the Owner to install their furnishings and equipment during the progress of the work. Owner's installation of furnishings or equipment does not signify Owner's acceptance of any portion of the work.

K. Clean-Up: Frequently clean-up all waste, remove from site regularly, and legally dispose of off-site.

L. Installer's Acceptance of Conditions: All installers shall inspect substrates and conditions under which work is to be executed and shall report in writing to the Contractor all conditions detrimental to the proper execution and completion of the work. Do not proceed with work until unsatisfactory conditions are corrected. Beginning work means installer accepts previous work and conditions.

M. Coordination: The Contractor shall be fully responsible for coordinating all trades, coordinating construction sequences and schedules, and coordinating the actual installed location and interface of all work.

N. Request For Interpretation (RFIs):

    a. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified

        i. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.

    b. Content of the RFI: Include a detailed, legible description of item needing interpretation.
    c. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow three working days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
    d. The following RFIs will be returned without action:
        i. Requests for approval of submittals.
        ii. Requests for approval of substitutions.

iii. Requests for coordination information already indicated in the Contract Documents.
iv. Requests for adjustments in the Contract Time or the Contract Sum.
v. Requests for interpretation of Architect's actions on submittals.
vi. Incomplete RFIs or RFIs with numerous errors.

O. Existing Articles of Unusual Value: If during demolition, excavation, or disposal work articles of unusual value or of historical or archaeological significance are encountered, the ownership of such articles is retained by the Owner, and information regarding their discovery shall be immediately furnished to the Architect. If the nature of the article is such that work cannot proceed without danger of damage, work in the area shall be immediately discontinued until the Architect has determined the proper procedure to be followed. Delays in time thereby shall be a condition for which the time of the Contract may be extended. Costs incurred after discovery in the salvaging of such articles shall be borne by the Owner.

1.11 SUBMITTALS

A. Required Submittals: Submit shop drawings, product data, initial selection samples, verification samples, calculations, coordination drawings, schedules, and all other submittals as specified in individual specification sections.

B. Submittal Schedule: Within 30 days after award of contract and before first application for payment, prepare list of submittals in chronological sequence showing all submittals and proposed date first due at Architect's office and proposed date due to be returned to Contractor. Note relevant specification section number.

C. Contractor's Preparation of Submittals: Modify and customize all submittals to show interface with adjacent work and attachment to building. Identify each submittal with name of project, date, Contractor's name, subcontractor's name, manufacturer's name, submittal name, relevant specification section numbers, and Submittal Schedule reference number. Stamp and sign each submittal to show the Contractor's review and approval of each submittal before delivery to Architect's office; unstamped and unsigned submittals will be returned without action by the Architect. Leave 4" x 6" open space for Architect's "action" stamp.

a. Electronic Submittals: Provide a copy of all submittals in electronic format to the Architect. Architect will return a file of reviewed submittal in electronic format to the Contractor for distribution to subcontractors, suppliers, fabricators, governing authorities and others as necessary for proper performance of the Work. Unless otherwise amenable to the Architect, additional hard copies of submittals will not be reviewed by the Architect (or Consultant) and will not be returned to the Contractor.
b. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
c. Name file with submittal number or other unique identifier, including revision identifier.
d. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect and Construction Manager.
e. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Architect.

D. Product Data: Provide manufacturer's preprinted literature including, without limitation, manufacturer's standard printed description of product, materials and construction, recommendations for application and use, certification of compliance with standards, instructions for installation, and special coordination requirements. Collect data into one

submittal for each unit of work or system; mark each copy to show which choices and options are applicable to project.

a. Installer Copy: Verify that the Installer has a current copy of the relevant product data, including installation instructions, before permitting installation to begin.

E. Shop Drawings: Provide accurately prepared, large scale and detailed shop drawings prepared specifically for this project. Show adjacent conditions and related work. Show accurate field dimensions and clearly note field conditions. Identify materials and products in the work shown. Note special coordination required.

a. After Architect's action, follow specified distribution procedure.

F. Samples: Provide units identical with final materials and products to be installed in the work. Where indicated, prepare samples to match Architect's sample. Label each sample with description, source, generic name or manufacturer's name and model number. Architect will review samples for confirmation of visual design intent, color, pattern, texture and type only; Architect will not test samples for compliance with other Contract requirements which shall remain the exclusive responsibility of the Contractor.

a. Initial Selection Samples Submittal Quantities: For initial selection purposes, submit 1 set of samples showing the complete range of colors and finishes available.
b. Verification Samples Submittal Quantities: For verification of an initial selection, submit 3 sets of samples; one set will be returned to Contractor to be maintained at project site for quality control comparisons.

G. Timing of Submittals: Submit submittals in a timely fashion to allow at least 10 business days for each office's review and handling. This means that submittals which have to be reviewed by the Architect and one of their consultants require at least 20 business days for review and handling. Add ten business days for each additional consultant who must review a submission.

H. Architect's Action on Submittals: Architect will review submittals, stamp with "action stamp", mark action, and return to Contractor. Architect will review submittals only for conformance with the design concept of the project. The Contractor is responsible for confirming compliance with other Contract requirements, including without limitation, performance requirements, field dimensions, fabrication methods, means, methods, techniques, sequences and procedures of construction, coordination with other work. The Architect's review and approval of submittals shall be held to the limitations stated in the Owner/Architect Agreement and the Conditions of the Contract. In no case shall approval or acceptance by the Architect be interpreted as a release of Contractor of their responsibilities to fulfill all of the requirements of the Contract Documents.

a. Required Resubmittal: Unless submittal is noted "reviewed" or "reviewed except as noted, resubmission not required," make corrections or changes to original and resubmit to Architect.
b. Distribution: When submittal is noted "reviewed" or "reviewed as noted, resubmittal not required," make prints or copies and distribute to Owner, Subcontractors involved, and to all other parties requiring information from the submittal for performance or coordination of related work.

1.12 WARRANTIES

A. Warranties Required: Refer to individual trade sections for specific product warranty requirements.

B. Procurement: Where a warranty is required, do not purchase or subcontract for materials or work until it has been determined that parties required to countersign warranties are willing to do so.

C. Warranty Forms: Submit written warranty to Owner through Architect for approval prior to execution. Furnish two copies of executed warranty to Owner for their records; furnish two additional conformed copies where required for maintenance manual.

D. Work Covered: Contractor shall remove and replace other work of project which has been damaged as a result of failure of warrantied work or equipment, or which must be removed and replaced to provide access to work under warranty. Unless otherwise specified, warranty shall cover full cost of replacement or repair, and shall not be pro-rated on basis of useful service life.

E. Warranty Extensions: Work repaired or replaced under warranty shall be warranted until the original warranty expiration date or for ninety days whichever is later in time.

F. Warranty Effective Starting Date: Guarantee period for all work, material and equipment shall begin on the date of substantial completion of the Project, not when subcontractor has completed their work nor when equipment is turned on. In addition to the one year guarantees for the entire work covered by these Contract Documents, refer to the various sections of the specifications for extended guarantee or maintenance requirements for various material and equipment.

G. Warranties are Irrevocable: Warranties issued to the Owner are irrevocable.

    a. Non-Payment: If warrantor refuses to issue warranty, or attempts to revoke warranty due to lack of payment by any party other than the Owner, the Contractor shall resolve the payment conflict, and cause the warranty to be issued or reinstated.
    b. Incomplete or incorrect Installation: If warrantor refuses to issue warranty, or attempts to revoke warranty due to improper installation or other deficiency, the Contractor shall correct the deficiency and cause the warranty to be issued or reinstated.

H. Transferable Warranties: All warranties shall permit Owner to transfer or assign warranties to future owners or other assignors at no additional cost to the Owner for the full warranty period.

1.13 CUTTING AND PATCHING

A. Limitations: Do not cut and patch any work in a manner that would result in a failure of the work to perform as intended, decreased energy performance, increased maintenance, decreased operational life, or decreased safety.

    a. Structural Work: Do not cut structural work or bearing walls without written approval from Architect. Where cutting and patching of structural work is necessary and approved by Architect, perform work in a manner which will not diminish structural capacity nor increase deflection of member. Provide temporary shoring and bracing as necessary. Ensure the safety of people and property at all times.

B. Cutting and Patching Materials: Use materials identical to materials to be cut and patched. If identical materials are not available or cannot be used, use materials that match existing

materials to the greatest extent possible. Provide finished work that will result in equal to or better than existing performance characteristics.

C. Inspection: Before cutting and patching, examine surfaces and conditions under which work is to be performed and correct unsafe and unsatisfactory conditions prior to proceeding.

D. Protection: Protect adjacent work from damage. Protect the work from adverse conditions.

E. Cutting: Cut work using methods least likely to damage adjoining work. Use tools designed for sawing or grinding, not hammering or chopping. Use saws or drills to ensure neat, accurately formed holes to sizes required with minimum disturbance to adjacent work. Temporarily cover openings; maintain weathertightness and safety.

    a. Utilities: Locate utilities before cutting. Provide temporary utilities as needed. Cap, valve, or plug and seal ends of abandoned utilities to prevent entrance of moisture or other foreign matter.

F. Patching: Patch with seams and joints which are durable and not visible. Comply with specified tolerances for similar new work; create true even planes with uniform continuous appearance. Restore finishes of patched areas and, if necessary, extend finish restoration onto adjoining unpatched area to eliminate evidence of patching and refinishing. Repaint entire assemblies, not just patched area. Remove and replace work which has been cut and patched in a visually unsatisfactory manner as determined by the Architect.

G. Qualifications: Retain experienced and specialized firms, original installers if possible, to perform cutting and patching. Workmen shall be skilled in type of cutting and patching required.

1.14 TEMPORARY FACILITIES AND UTILITIES

A. Scope of Temporary Work: This article is not intended to limit the scope of temporary work required under the Contract. Provide all temporary facilities and utilities needed.

B. Permits and Fees: Obtain and pay for all permits, fees and charges related to temporary work.

C. Codes and Authorities Having Jurisdiction for Temporary Facilities and Utilities: Comply with all requirements of authorities having jurisdiction, codes, utility companies, OSHA, and industry standards including, but not limited to the following:

    a. NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
    b. ANSI-A10 Series, Safety Requirements for Construction and Demolition.
    c. NECA National Joint Guideline NJG-6, Temporary Job Utilities and Services.
    d. Electrical Service: NEMA, NECA, and UL.

D. Field Offices: Provide Contractor's field offices as needed. Keep current copies of all Contract Documents and project paperwork neatly on file at jobsite. Permit Architect's unrestricted use of Contractor's field office facilities including copiers, telephones, plan tables, and other equipment. Furnish, maintain, and pay for light, power, phone, fax, and other field office services.

E. Shops and Sheds: At Contractor's option, provide shops and sheds for Contractor's use as needed. Locate shops and sheds where acceptable to Owner and authorities having

jurisdiction. Prior to completion of construction, temporary storage facilities and surplus stored materials shall be removed from the site.

F. Temporary Heat: Provide temporary heat as needed to protect the work and create a suitable work environment. Provide temporary heat to protect the exterior construction against injury or damage resulting from cold temperature and dampness, to heat materials, and to maintain the minimum temperatures specified herein and in individual specification sections. Protect building from soot, smoke and fire damage. Do not use heaters which would interfere with curing of mortar and grout or damage any materials.

    a. Heaters for temporary heat shall be approved temporary steam generators or forced warm air heaters located outside the building or vented to the outside, or other safety type UL approved heating devices acceptable to the Architect.
    b. Oil burning salamander type heaters will not be permitted. Non-vented, open flame heaters will not be permitted inside the building once the building is closed-in.
    c. Propane type-heaters will not be permitted within the area of the building or near stockpiles of combustible materials.
    d. Permanent building equipment shall not be used without written permission from the Owner. If the equipment is used for temporary heating or cooling, it shall be adequately maintained per manufacturer's instructions and protected with filters, strainers, controls, reliefs, and similar items. Prior to turnover to Owner, the equipment shall be in a clean, like new condition. The guarantee period shall not start until the equipment is turned over to the Owner for their use. Do not invalidate existing warranty by any action or failure to act. Clean and change air filters frequently to prevent construction dust and debris from contaminating system.

G. Pumping and Drainage: Protect excavations, trenches, buildings and materials from rain water, ground water, backup or leakage of sewers, drains and other piping, and from water of any other origin. Promptly remove any accumulation of water. Provide and operate all pumps, piping and other equipment necessary for pumping, drainage and protection from water.

H. Equipment and Tools: Provide all equipment including, but not limited to, hoists, lifts, scaffolding, machines, tools and the like, as needed for execution of the work. Provide safe access to all parts of the work.

I. Temporary Enclosures: Provide temporary enclosures to maintain proper temperatures and to prevent weather damage. Always maintain legal means of egress.

J. Snow and Ice: Remove all snow and ice which interferes with work or safety.

K. Streets, Walks and Grounds: Maintain public and private roads and walks clear of debris caused by construction operations. Repair all damage caused to streets, drives, curbs, sidewalks, fences, poles and similar items where disturbed or damaged by building construction and leave them in as good condition after completion of the work as before operations started.

L. Protection: Protect nearby property and the public from construction activities. Provide and maintain barricades, warning signs and lights, railings, walkways and similar items. Immediately repair damaged property to its condition before being damaged.

M. Public Services: Provide temporary public services such as, street lighting, night lighting, sidewalks, covered passages, signs, signals and the like, as requested by authorities having jurisdiction.

N. Construction Fencing: Provide construction fencing and barriers as applicable to the project and as required by code to protect personnel, the public, and to control access.

O. Security: Secure site against unauthorized entry at all times. Provide secure, locked temporary enclosures. Protect the work at all times. Provide watchman service, if necessary, to protect the work.

P. Signs: Erect project identification signs in compliance with details to be provided by Architect. Signs shall be minimum 4' x 8' exterior grade plywood and shall contain the names of the project, Owner, Architect, major Consultants, Contractor, and major financing institution. Except for safety and warning signs, no other signs are permitted. Location as acceptable to the Architect.

Q. Fire Prevention: Take every precaution to prevent fire. Provide and maintain in good operating condition suitable and adequate fire protection equipment and services, and comply with recommendations regarding fire protection made by the representative of the fire insurance company carrying insurance on the Work or by the local fire chief or fire marshal. The area within the site limits shall be kept orderly and clean, and all combustible rubbish shall be promptly removed from the site.

R. Egress: Maintain safe and legal means of egress at all times. At all times, provide at least two separate means of egress.

S. Mold Control and Remediation During Construction: The Contractor shall protect construction materials and building systems from moisture damage and from conditions which promote mold growth during and after construction. The Contractor shall be responsible for mold remediation and replacement of materials which cannot be successfully remediated in accordance with the following requirements:

   a. Materials which become wet prior to installation shall be cleaned, treated and dried in accordance with EPA Guidelines.
   b. Materials which exhibit mold growth prior to installation shall not be installed and shall be removed from the site.
   c. Materials which exhibit mold growth after installation shall be remediated in accordance with EPA Guidelines for Remediating Building Materials with Mold Growth Caused by Clean Water. The Contractor shall engage and pay for a qualified industrial hygienist acceptable to the Owner to determine the cause of the mold growth, and to certify in writing that materials have been successfully remediated. In the event that the industrial hygienist recommends methods of remediation in addition to those in the Guidelines, the Contractor shall also be responsible for the additional remediation. Materials which can not be successfully remediated shall be removed and replaced with new materials at no additional expense to the Owner.
   d. Prior to the start of construction, the Contractor shall submit the name of the person in the Contractor's organization responsible for ensuring compliance with these requirements for mold control and remediation.

T. Existing Mold-Contaminated Materials: In the event that mold-contaminated materials are encountered during remodeling operations, the Contractor shall stop work in that area and notify the Owner and Architect in writing. The Owner will engage and pay for an industrial hygienist to evaluation the situation to advise the Contractor on the proper course of action.

1.15 PRODUCTS AND SUBSTITUTIONS

A. Specified Products: In all cases in which a manufacturer's name, trade name or other proprietary designation is used in connection with materials or articles to be furnished under this Contract, whether or not the phrase "or equal" is used after such name, the Contractor shall provide the product of the named manufacturers without substitution, unless a written request for a substitution has been submitted by the Contractor and approved in writing by the Architect.

B. Deviations from Detailed Requirements: If the Contractor proposes to use material which, while suitable for the intended use, deviates in any way from the detailed requirements of the Contract Documents, the Contractor shall inform the Architect in writing of the nature of such deviations at the time the materials is submitted for approval, and shall request written approval of the deviation from the requirements of the Contract Documents.

C. Approval of Substitutions: In requesting approval of deviations or substitutions, the Contractor shall provide evidence, including, but not limited to manufacturer's data, leading to a reasonable certainty that the proposed substitution or deviation will provide a quality of result at least equal to that attainable if the detailed requirements of the Contract Documents were strictly followed. If, in the opinion of the Architect, the evidence presented by the Contractor does not provide a sufficient basis for such reasonable certainty, the Architect may reject such substitution or deviation without further investigation.

D. Intent of Contract Documents: The Contract Documents are intended to produce a building of consistent character and quality of design. All components of the building including visible items of mechanical and electrical equipment have been selected to have a coordinated design in relation to the overall appearance of the building. The Architect shall judge the design and appearance of proposed substitutes on the basis of the suitability in relation to the overall design of the Project, as well as for their intrinsic merits. The Architect will not approve as equal to materials specified proposed substitutes which in the Architect's opinion, would be out of character, obtrusive, or otherwise inconsistent with the character or quality of design of the Project. In order to permit coordinated design of color and finishes the Contractor shall furnish the substituted material in any color, finish texture, or pattern which would have been available from the manufacturer originally specified, at no additional cost to the Owner.

E. Additional Costs or Impact: Any additional cost, or any loss or damage arising from the substitution of any material or any method for those originally specified shall be borne by the contractor, notwithstanding approval or acceptance of such substitution by the Owner or the Architect, unless such substitution was made at the written request or direction of the Owner and the Architect. Any decrease in the cost of the substitution shall be returned to the Owner.

F. Manufacturers: To the greatest degree possible, provide primary materials and products from one manufacturer for each type or kind. Provide secondary materials as recommended by manufacturers of primary materials.

G. Substitution Requests: Refer to Section 016200 - SUBSTITUTION REQUEST FORM. Submit 3 copies. Identify product to be replaced by substitute by reference to specification sections and drawing numbers. Provide Contractor's certification and evidence to prove compliance with Contract Document requirements as acceptable to Architect.

H. Substitution Conditions: Substitution requests will be returned without action unless one of the following conditions is satisfied. The Contractor shall state which of the following conditions applies to the requested substitution:

    a. Request is due to an "or equal" clause.
    b. Specified material or product cannot be coordinated with other work.

c. Specified material or product is not acceptable to authorities having jurisdiction.
d. Substantial advantage is offered Owner in terms of cost, time, or other valuable consideration.
e. Specified material or product is not available.

I. Invalid Substitutions: Contractor's submittal and Architect's acceptance of shop drawings, samples, product data or other submittal is not a valid request for, nor an approval of a substitution unless the Contractor presents the information when first submitted as a Request for Substitution.

J. Compatibility of Materials Used in the Work:

a. Ensure complete compatibility between materials.
b. Compatibility shall include adhesion, erosion, solubility, differential thermal response, and galvanic action.
c. Provide evidence of compatibility.
d. Provide custom testing where evidence is not available.
e. Where materials are not compatible, provide necessary isolation or transition materials and provide details of same.
f. Correct defects resulting from incompatibility including de-construction and re-construction of assemblies – whether materials are part of a submittal and substitution process or not.
g. Proposed substitutions may be rejected where compatibility information is not provided; or where compatibility is not adequately addressed, according to the Architect’s judgment; or where incompatible materials would negatively impact the project’s success.

1.16 DELIVERY, STORAGE AND HANDLING

A. Manufacturer's Instructions: Strictly comply with manufacturer's instructions and recommendations and prevent damage, deterioration and loss, including theft. Minimize long-term storage at the site. Maintain environmental conditions, temperature, ventilation, and humidity within range permitted by manufacturers of materials and products used.

1.17 OWNER-FURNISHED CONTRACTOR-INSTALLED (OFCI) PRODUCTS

A. Owner will furnish products indicated. The Contractor’s Work includes providing support systems to receive Owner's equipment and making plumbing, mechanical, and electrical connections.

a. Owner will arrange for and deliver Shop Drawings, Product Data, and Samples to Contractor.
b. Owner will arrange and pay for delivery of Owner-furnished items according to Contractor's Construction Schedule.
c. After delivery, Owner will inspect delivered items for damage. Contractor shall be present for and assist in Owner's inspection.
d. If Owner-furnished items are damaged, defective, or missing, Owner will arrange for replacement.
e. Owner will arrange for manufacturer's field services and for delivery of manufacturer's warranties to Contractor.
f. Owner will furnish Contractor the earliest possible delivery date for Owner-furnished products. Using Owner-furnished earliest possible delivery dates, Contractor shall designate delivery dates of Owner-furnished items in Contractor's Construction Schedule.

g. Contractor shall review Shop Drawings, Product Data, and Samples and return them to Architect noting discrepancies or anticipated problems in use of product.
h. Contractor is responsible for receiving, unloading, and handling Owner-furnished items at Project site.
i. Contractor is responsible for protecting Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.
j. If Owner-furnished items are damaged as a result of Contractor's operations, Contractor shall repair or replace them.
k. Contractor shall install and otherwise incorporate Owner-furnished items into the Work.

B. Owner-Furnished Products: As directed by the Architect.

1.18 LABELS

A. Labels, Trademarks, & Tradenames: Locate required labels on inconspicuous surfaces. Do not provide labels, nameplates, or trademarks which are not required. Provide permanent data plate on each item of equipment stating manufacturer, model, serial number, capacity, ratings and all other essential data.

1.19 RECORD DOCUMENTS

A. Definition of As-Constructed Record Drawings: (commonly called “as-builts”) are the record of the Project as constructed based on information the Contractor provides to the Owner under the contract for construction. Because the As-constructed Record Drawings will be based on the Contractor’s mark-ups, the Architect is not responsible for the accuracy or completeness of the As-constructed Record Drawings.

B. Definition of As-Designed Record Drawings: The record of everything the Architect designed for the Project, and including the original Construction Documents plus all addenda, Architect’s Supplemental Instructions, Change Orders, Construction Change Directives and minor changes in the work.

C. General: Keep as-constructed record documents neatly and accurately. Record information as the work progresses and deliver to Architect at time of final acceptance. Include in record documents all field changes made, all relevant dimensions, and all relevant details of the work. Keep record documents up to date with all Architect’s Supplemental Instructions, Change Orders, Construction Change Directives and minor changes in the work clearly indicated.

D. Drawings: Keep four separate sets of blackline prints at the site, one set each for mechanical, electrical, plumbing, and architectural/structural disciplines. Neatly and accurately note all deviations from the Contract Documents and the exact actual location of the work as installed. Marked-up and colored prints will be used as a guide to determine the progress of the work installed. Requisitions for payment will not be approved until the record documents are accurate and up-to-date.

a. Work Outside Building: Record data outside of building to an accuracy of plus or minus 1 inch and determine and record the invert elevation of all drain lines.
b. At completion of the work, submit one complete set of marked-up as-built prints for review. After acceptance, these marked-up as-built prints shall be used in the preparation of the as-built drawings.
c. Architect shall furnish Contractor with AutoCAD or BIM Design Intent Model or both files for originals of the Contract Drawings. The Contractor shall make modifications

to these files as shown on the marked-up prints. Remove superseded data to show the completed installation.

d. The Contractor shall deliver the completed AutoCAD or BIM Design Intent Model or both as-constructed record drawings, in the same version as Contract Drawings, properly titled and dated to the Architect. Indicate preparer of as-built drawings. These as-built drawings shall become the property of the Owner.

E. Specifications: Maintain one clean copy of complete specifications including addenda, modifications, and bulletins with changes, substitutions, and selected options clearly noted. Circle or otherwise clearly indicate which manufacturer and products are actually used.

F. Operating and Maintenance Manuals: Manuals shall be submitted which contain the following:

a. Description of the system provided.
b. Handling, storage, and installation instructions.
c. Detailed description of the function of each principal component of the systems or equipment.
d. Operating procedures, including prestartup, startup, normal operation, emergency shutdown, normal shutdown and troubleshooting.
e. Maintenance procedures including lubrication requirements, intervals between lubrication, preventative and repair procedures, and complete spare parts list with cross reference to original equipment manufacturer's part numbers.
f. Control and alarm features including schematic of control systems, control loop electric ladder diagrams, controller operating set points, settings for alarms and shutdown systems, pump curves and fan curves.
g. Safety and environmental considerations.

G. Copies of Operating and Maintenance Manuals: Three copies of the manuals shall be provided within sufficient time to allow for training of Owner's personnel. Submit one copy of the manuals to the Architect for review no later than 90 calendar days prior to substantial completion, or building turn over, whichever comes first. Submit the remaining five copies within 15 days after first review set is returned to contractor. Progress payment may be withheld if this requirement is not met.

H. Additional Requirements for Operating and Maintenance Manuals: The requirements for manuals applies to each packaged and field-fabricated operating system. The manuals shall be provided in three-ring side binders with durable plastic covers. The manuals shall contain a detailed table of contents and have tab dividers for major sections and special equipment.

I. Framed Data: Provide charts and lists of all valves, circuits, switches, controls and equipment. Install on walls under glass at locations directed by Architect.

1.20 PROJECT CLOSE OUT

A. Complete the following prior to Substantial Completion:

a. Provide Contractor's Punch List of incomplete items stating reason for incompletion and value of incompletion.
b. Advise Owner of insurance change over requirements.
c. Submit all warranties, maintenance contracts, final certificates and similar documents.
d. Obtain Certificate of Occupancy and similar releases which permit the Owner's full and unrestricted use of the areas claimed "Substantially Complete".

e. Submit record documents.
f. Deliver maintenance stocks of materials where specified.
g. Make final change over of lock cylinders or cores and advise Owner of change of security responsibility.
h. Complete startup of all systems and instruct Owner's personnel in proper operation and routine maintenance of systems and equipment.
i. Complete clean up and restoration of damaged finishes.
j. Remove all temporary facilities and utilities that are no longer needed.
k. Request Architect's inspection for Substantial Completion.

B. Architect will either issue a Certificate of Substantial Completion or notify Contractor of work which must be performed prior to issue of certificate.

C. Complete the following prior to Final Acceptance and payment:

a. Obtain Certificate of Substantial Completion.
b. Submit final application for payment, showing final accounting of changes in the work.
c. Provide final releases and lien waivers not previously submitted.
d. Submit certified copy of final punch list stating that Contractor has completed or corrected each item.
e. Submit final meter readings, record of stored fuel and similar information.
f. Submit Consent of Surety for final payment.
g. Submit evidence of Contractor's continuing insurance coverage (if required by Contract Documents).

1.21 FINAL CLEANING AND REPAIR

A. Clean Up: Immediately prior to the Architect's inspection for Substantial Completion, the Contractor shall completely clean the premises and clean and prepare the completed work in order for it to be used for its intended purpose in accordance with the Contract Documents. Such work shall include, but not be limited to the following:

a. Concrete and ceramic surfaces shall be cleaned and washed.
b. Resilient coverings shall be cleaned, waxed and buffed as applicable.
c. Woodwork shall be dusted and cleaned.
d. Sash, fixtures and equipment shall be thoroughly cleaned.
e. Stains, spots, dust, marks and smears shall be removed from all surfaces.
f. Hardware and metal surfaces shall be cleaned and polished.
g. Glass and plastic surfaces shall be thoroughly cleaned by professional window cleaners.
h. Damaged, broken or scratched glass or plastic shall be replaced by the Contractor at the Contractor's expense.
i. Vacuum carpeted and soft surfaces with high efficiency particulate arrestor (HEPA) vacuum.
j. Use low-emitting, environmentally friendly cleaning agents and procedures. Do not use ammonia-, chlorine bleach-, or solvent-based cleaners, unless authorized in writing by Architect.

B. Repairs: Repair and touch-up all damaged and deteriorated products and surfaces.

PART 2 – PRODUCTS [Not Used]

PART 3 – EXECUTION [Not Used]

END OF SECTION

SECTION 012100
ALLOWANCES

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.

1. Selected materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

2. Whenever costs are more or less than allowances, the contract sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect the difference between actual costs and the allowance.

B. Types of allowances include the following:

1. Lump-sum allowances.
    a. This is a fixed amount allowance for a given item.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise the Owner and Architect of the date when the final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work. Include these milestone dates in the Contractor’s Construction Schedule.

B. At the Owner or Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by the Owner and Architect from the designated supplier.

1.3 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices and delivery slips to show the actual costs and quantities of materials delivered to the site for use in fulfillment of each allowance.

1.4 UNUSED MATERIALS

A. Return unused materials to the manufacturer or supplier for credit to the Owner, after installation has been completed and accepted.

1. When requested by the Owner, prepare unused material for storage by the Owner University where it is not economically practical to return the material for credit. When directed by the Owner anytime during the contract period, deliver unused material to the Owner's storage space. Otherwise, disposal of unused material is the Contractor's responsibility.

PART 2 – PRODUCTS [Not Used]

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly upon delivery for damage or defects. Report any damages or defects to the Owner and Architect and make arrangements for replacement of defective or damaged materials.

3.2 PREPARATION

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

3.3 SCHEDULE OF ALLOWANCES

A. ALLOWANCE #1: Carriage House Door Rehabilitation and Reconfiguration (Door #101).

1. Lump-Sum Allowance: $7,500.
2. Rehabilitation and reconfiguration of Door #101 as depicted in the Drawings and Section 081499, WOOD DOOR REPAIR AND REFURBISHMENT. Details and scope of work to be reviewed with Contractor and qualified restoration specialist Subcontractor.
3. This allowance includes labor, material costs (including door hardware), and Contractor overhead and profit.

B. ALLOWANCE #2: Foundation Water Infiltration Mitigation at Northeast Corner of Building (Column Grid D4).

1. Lump-Sum Allowance: $15,000.
2. Mitigation of water infiltration at the northeast corner of the existing concrete foundation. Existing conditions, details, and scope of work to be reviewed and determined with Contractor and sitework Subcontractor to ensure most appropriate and cost effective solution.
3. This allowance includes labor, materials costs, and Contractor overhead and profit.

END OF SECTION

SECTION 014517
FIELD TESTING OF EXTERIOR ASSEMBLIES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Field testing of completed exterior air-vapor barrier assemblies for air leakage performance.
2. Coordination, execution, reporting, and corrective retesting related to air leakage testing.

B. Scope of Testing:

1. Testing is limited to air leakage of the air-vapor barrier assembly.
2. Water penetration testing and other envelope performance testing are not included.

1.2 REFERENCES

A. ASTM International:

1. ASTM E779 – Standard Test Method for Determining Air Leakage Rate by Fan Pressurization.
2. ASTM E1827 – Standard Test Method for Determining Airtightness of Buildings Using an Orifice Blower Door.

B. U.S. Army Corps of Engineers:

1. Air Leakage Test Protocol for Building Envelopes (as applicable to enclosure component testing).

1.3 DEFINITIONS

A. Air-Vapor Barrier Assembly: Continuous combination of materials and components forming the primary plane of airtightness and vapor control for the above-grade exterior enclosure.

B. Six-Sided Exterior Shell: Aggregate area of all above-grade walls, roofs, floors over unconditioned space, and other enclosure components bounding conditioned space.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Pre-Testing Conference:

1. Conduct a pre-testing conference at the Project site prior to commencement of air leakage testing.
2. Attendees shall include Owner’s Representative, Architect, Construction Manager, General Contractor, Air-Vapor Barrier Installer, Testing Agency, and other trades impacting enclosure continuity.

3. Review testing scope, sequence, test areas, acceptance criteria, temporary sealing, protection of historic materials, and documentation requirements.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer data for temporary sealing materials used for testing.

B. Test Plan: Submit a written test plan prepared by the Testing Agency describing:

1. Test method and standards.
2. Test locations and boundaries.
3. Temporary sealing methods.
4. Protection measures for historic materials and assemblies.

C. Reports:

1. Preliminary Report: Submit within 5 days of testing.
2. Final Report: Submit within 10 days of completion of corrective work and retesting.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications:

1. Independent firm specializing in building enclosure air leakage testing.
2. Minimum 5 years documented experience with ASTM E779 or E1827 testing.
3. Personnel performing testing shall have documented training and experience with calibrated fan pressurization equipment.

B. Equipment Calibration: Provide evidence of current calibration for all test equipment.

1.7 PROJECT CONDITIONS

A. Historic Rehabilitation Requirements:

1. Protect historic materials, finishes, and assemblies from damage during testing.
2. Temporary sealing methods shall be reversible and shall not stain, mar, or damage historic fabric.

B. Environmental Conditions:

1. Perform testing when sustained wind speeds are below 15 mph.
2. Avoid testing during precipitation or extreme temperature differentials that could affect results.

PART 2 – PRODUCTS

2.1 TEMPORARY SEALING MATERIALS

A. Provide materials compatible with historic construction and capable of complete removal without residue or damage.

B. Do not use adhesives, fasteners, or sealants that could alter or damage historic materials.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that air-vapor barrier assemblies are complete, continuous, and visually inspected prior to testing.

B. Notify Architect of conditions that would prevent meaningful testing.

3.2 PREPARATION

A. Prepare the building or test area in accordance with ASTM E779 or ASTM E1827.

B. Temporarily seal intentional openings not part of the air-vapor barrier, including:

1. Operable windows and doors.
2. Mechanical intakes, exhausts, and relief openings.
3. Plumbing and electrical penetrations not sealed as part of permanent construction.

3.3 AIR LEAKAGE TESTING

A. Perform fan pressurization testing in accordance with ASTM E779 or ASTM E1827.

B. Test Pressure:

1. Conduct testing at a pressure differential of 50 Pascals (0.2 inches water column).

C. Test Area:

1. Calculate air leakage based on the total six-sided above-grade exterior shell area.

3.4 PERFORMANCE REQUIREMENTS

A. Air-Vapor Barrier Assembly Air Leakage Requirement:

1. Maximum air leakage: 0.3 cfm per sq. ft. of six-sided exterior shell at 50 Pa.

B. Compliance:

1. Assemblies exceeding the maximum allowable air leakage shall be considered non-conforming.

3.5 CORRECTIVE ACTIONS

A. Identify locations of excessive air leakage using smoke, infrared thermography, or other diagnostic tools.

B. Repair deficiencies in air-vapor barrier continuity.

C. Retest until compliance with specified performance requirements is achieved.

3.6 REPORTING

A. Reports shall include:

1. Project identification and location.
2. Test date, time, and weather conditions.
3. Test method and equipment used.
4. Test pressure and measured air leakage rates.
5. Calculated air leakage per square foot of six-sided exterior shell.
6. Statement of compliance or non-compliance.
7. Description of corrective actions and retesting, if required.

END OF SECTION

SECTION 016200
SUBSTITUTION REQUEST FORM

No substitutions will be considered without this completed substitution request form and supporting documentation. Substitutions made without completion of this form will be considered defective work as stated in AIA A201.

Date: _____ Number: _____

Re: Request for Substitution

The Contractor proposes the following substitution in accordance with the requirements of the Contract Documents:

Scope of Substitution _____
_____

Specification Reference _____
_____

Drawing Reference _____
_____

Reason for Proposed Substitution _____
_____
_____

Benefit to Owner _____

Impact on Project Cost _____
_____

Impact on Project Schedule _____
_____

Impact on Guarantees and Warranties _____
_____

Coordination and Compatibility Required With Adjacent Materials and Systems _____
_____

_____

List Deviations from Specified Requirements _____

_____

_____

_____

Attachments: Attach supporting documentation sufficient for Architect to evaluate substitution. Substitution Request Forms submitted without adequate documentation will be returned without review.

Attachments _____

_____

_____

Response Date: List date by which response by Architect is requested to maintain project schedule and allow sufficient time for inclusion of proposed substitution.

Response Date _____

Submitted By _____

Firm and Address _____

_____

Signature below signifies acceptance of responsibility for accuracy and completeness of information included in this Substitution Request Form.

Authorized Signature _____

ARCHITECT'S RESPONSE

Notations listed below shall have same meaning as on Architect's approval stamp. Clarifications to or changes in project schedule or time shall be processed using standard project forms.

Architect's Response _____ Approved

_____ Approved as Corrected

_____ Revise and Resubmit

_____ Rejected

_____ Returned Without Review

Remarks _____

_____

_____

_____

_____

_____

Date _____

Signed _____

END OF FORM

SECTION 024100
DEMOLITION

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included:

a. Demolition and removal of selected portions of buildings and structures and as required for new work. Refer to the Drawings for additional requirements.
b. Demolition and removal of selected site elements and as required for new work. Refer to the Drawings for additional requirements.
c. Salvage of existing items to be reused or turned over to the facility.
d. Removal and legal disposal of demolished materials off site. Except those items specifically designated to be relocated, reused, or turned over to the facility, all existing removed materials, items, trash and debris shall become property of the Contractor and shall be completely removed from the site and legally disposed of at their expense. Salvage value belongs to the Contractor. On-site sale of materials is not permitted.
e. Demolition and removal work shall properly prepare for alteration work and new construction to be provided under the Contract.
f. Scheduling and sequencing operations without interruption to utilities serving occupied areas. If interruption is required, obtain written permission from the utility company and the Owner.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

a. Section 011000 - GENERAL REQUIREMENTS for temporary facilities and controls, for maintenance of access, for cleaning during construction, and for dust and noise control.
b. Division 22 - PLUMBING:
    i. Disconnecting, capping and otherwise making inactive existing plumbing services in areas where demolition and removal work is required.
    ii. Disconnection and reinstallation of plumbing equipment temporarily interrupted during construction.
c. Division 23 - HEATING, VENTILATING AND AIR CONDITIONING:
    i. Disconnecting, capping and otherwise making inactive existing HVAC services in areas where demolition and removal work is required.
    ii. Disconnect and reinstallation of HVAC equipment temporarily interrupted during construction.
d. Division 26 - ELECTRICAL WORK:
    i. Disconnecting, capping and otherwise making inactive existing electrical services in areas where demolition and removal work is required.

ii. Disconnect and reinstallation of electrical equipment temporarily interrupted during construction.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to the Owner ready for reuse, at a location designated by the Owner. Protect from weather until accepted by Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated. Protect from weather until reinstallation.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain property of the Owner as applicable. Carefully remove each item or object in a manner to prevent damage and deliver promptly to a location acceptable to the Owner.

1.5 SUBMITTALS

A. Schedule of Selective Demolition Activities: Indicate the following:

a. Detailed sequence of selective demolition and removal work, with early and late starting and finishing dates for each activity. Ensure Owner's on-site operations are uninterrupted if applicable.
b. Interruption of utility services. Indicate how long utility services will be interrupted.
c. Coordination for shutoff, capping, and continuation of utility services.
d. Use of elevator and stairs.
e. Locations of proposed dust- and noise-control temporary partitions and means of egress, including for other occupants affected by selective demolition operations.
f. Coordination of Owner's continuing occupancy of portions of existing building and of Owner’s partial occupancy of completed Work.
g. Means of protection for items to remain and items in path of waste removal from building.

B. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged, and turned over the Owner.

C. Predemolition Video and Pictures: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Comply with Division 01 requirements. Submit before Work begins.

1.6 QUALITY ASSURANCE

A. Examination of Existing Conditions: The Contractor shall examine the Contract Drawings for demolition and removal requirements and provisions for new work. Verify all existing conditions and dimensions before commencing work. The Contractor shall visit the site and examine the existing conditions as he finds them and shall inform herself/himself of the character, extent and type of demolition and removal work to be performed. Submit any questions regarding the extent and character of the demolition and removal work in the manner and within the time period established for receipt of such questions during the bidding period.

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

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Predemolition Conference: Conduct conference at Project site to comply with requirements in Section 011000 - GENERAL REQUIREMENTS, Project Meetings. Review methods and procedures related to selective demolition including, but not limited to, the following:
   a. Inspect and discuss condition of construction to be selectively demolished.
   b. Review structural load limitations of existing structure.
   c. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
   d. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
   e. Review areas where existing construction is to remain and requires protection.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 – PRODUCTS

2.1 SALVAGING

A. Salvaged for Reinstallation: Materials indicated on the Drawings to be salvaged and reinstalled shall be carefully removed and stored at a location acceptable to the Architect and Owner.

B. Salvaged for Storage: Materials indicated on the Drawings or designated in the field by the Owner to be salvaged and stored shall be carefully removed and delivered to the Owner at locations determined by Owner.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Engage a professional engineer registered in the state that the project is located to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

F. Survey of Existing Conditions: Record existing conditions by use of preconstruction videotapes.

    a. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

G. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

    a. Arrange to shut off indicated utilities with utility companies and Owner.
    b. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
    c. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.
    d. Prior to commencing cutting work in existing surfaces, take all precautionary measures to assure that mechanical and electrical services to the particular area have been made inactive. Coordinate with Fire Suppression, Plumbing, HVAC, and Electrical subcontractors. Only licensed tradesmen of that particular trade shall disconnect and cap existing mechanical and electrical items that are to be removed, abandoned and/or relocated.
    e. If, during the process of cutting work, existing utility lines are encountered which are not indicated on the Drawings, regardless of their condition, immediately report such items to the Architect. Do not proceed with work in such areas until instructions are issued by the Architect. Continue work in other areas.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

    a. Comply with requirements for access and protection specified in Section 011000 - GENERAL REQUIREMENTS, Temporary Facilities and Controls.
    b. Maintain adequate passage to and from all exits at all times. Before any work is done which significantly alters access or egress patterns, consult with the Architect and obtain approval of code required egress. Under no condition block or interfere with the free flow of people at legally required exits, or in any way alter the required condition of such exits.

B. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

    a. Strengthen or add new supports when required during progress of selective demolition.
    b. Remove temporary shoring, bracing and structural supports when no longer required.
    c. Post warning signs and place barricades as applicable during placement and removal of temporary shoring.

C. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around demolition area(s).

    a. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction. Provide temporary barricades as required to limit access to demolition areas.
    b. Protect existing site improvements, appurtenances, and landscaping to remain.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

    a. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
    b. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
    c. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
    d. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
    e. Maintain adequate ventilation when using cutting torches.
    f. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

g. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
h. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
i. Maintain clear unimpeded passage through the work area for safety and emergency egress.
j. Saw cut overruns in concrete and masonry for new door, window and other finish openings is not permitted. Core drill corners and finish square to match required opening.
k. Dispose of demolished items and materials promptly.

B. Removed and Salvaged Items:

a. Clean salvaged items.
b. Pack or crate items after cleaning. Identify contents of containers.
c. Store items in a secure area until delivery to Owner.
d. Transport items to storage area designated by the Owner.
e. Protect items from damage during transport and storage.

C. Removed Items for Reinstallation by the Respective Trade.

a. Clean salvaged items.
b. Pack or crate items after cleaning. Identify contents of containers.
c. Store items in a secure area until delivery to Owner.
d. Transport items to storage area designated by the Owner.
e. Protect items from damage during transport and storage.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

E. Items for Re-use and Preservation of Existing Surfaces to Remain:

a. The Contractor shall inspect closely each item specifically designated to be relocated, re-used, or turned over to the Owner prior to its removal, and immediately report damages and defects to the Architect and the Owner. The Contractor shall be responsible for any subsequent damage to the same other than latent defects not readily apparent from close inspection, and shall bear responsibility for its repair or same replacement as directed by the Architect, to the satisfaction of the Owner.
b. Unless special surface preparation is specified under other Specification Sections, leave existing surfaces that are to remain in a condition suitable to receive new materials and/or finishes.

3.5 PROTECTION OF PUBLIC AND PROPERTY

A. Provide all measures required by federal, state and municipal laws, regulations, and ordinances for the protection of surrounding property, the public, workmen, and Owner's employees during all demolition and removal operations. Measures are to be taken, but not limited to installation of sidewalks, sheds, barricades, fences, warning lights and signs, trash chutes and temporary lighting.

B. Protect all walks, roads, streets, trails, curbs, pavements, trees and plantings, on and off premises, and bear all costs for correcting such damage as directed by the Architect, and to the satisfaction of the Owner.

C. Demolition shall be performed in such a manner that will insure the safety of adjacent property. Protect adjacent property from damage and protect persons occupying adjacent property from injuries which might occur from falling debris or other cause and so as not to cause interference with the use of other portions of the building, of adjacent buildings or the free access and safe passage to and from the same.

D. Every precaution shall be taken to protect against movement or settlement of the building, of adjacent buildings, sidewalks, roads, streets, curbs and pavements. Provide and place at the Contractor's own expense, all necessary bracing and shoring in connection with demolition and removal work.

E. Remove portions of structures with care by using tools and methods that will not transfer heavy shocks to existing and adjacent building structures, both internal and external of the particular work area.

F. Provide and maintain in proper condition, suitable fire resistive dust barriers around areas where interior demolition and removal work is in progress. Dust barriers shall prevent the dust migration to adjacent areas. Remove dust barriers upon completion of major demolition and removal in the particular work area.

3.6 DISCOVERY OF HAZARDOUS MATERIALS

A. If hazardous materials, such as chemicals, asbestos-containing materials, or other hazardous materials are discovered during the course of the work, cease work in affected area only and immediately notify the Architect and the Owner of such discovery. Do not proceed with work in such areas until instructions are issued by the Architect. Continue work in other areas.

B. If unmarked containers are discovered during the course of the work, cease work in the affected area only and immediately notify the Architect and the Owner of such discovery. Do not proceed with work in such areas until instructions are issued by the Architect. Take immediate precautions to prohibit endangering the containers integrity. Continue work in other areas.

3.7 CUTTING

A. Perform all cutting of existing surfaces in a manner which will ensure a minimal difference between the cut area and new materials when patched. Use extreme care when cutting existing surfaces containing concealed utility lines which are indicated to remain and bear full responsibility for repairing or replacement of all such utilities that are accidentally damaged.

B. Provide a flush saw cut edge where pavement, curb and concrete removals abut new construction work or existing surfaces to remain undisturbed.

C. All slurry and water shall be contained and managed to avoid damage to existing conditions when using a wet saw or wet core driller.

D. Obtain and pay for a hot work permit and arrange to have on-site a Fire Watch when using a cutting torch or similar item.

3.8 DISPOSAL OF DEMOLISHED MATERIALS

A. General:

a. Do not allow demolished materials to accumulate on-site.
b. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
c. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

3.9 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Premises shall be left in a clean condition and ready to accept alteration work and new construction.

END OF SECTION

SECTION 055000

METAL FABRICATIONS

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following. Requirements for materials, hot-dip galvanizing, and shop-applied primers are included with each item as applicable.

1. Miscellaneous steel framing and supports:

~~a. Galvanized steel framing and supports for overhead doors.~~
b. Galvanized steel framing and supports for mechanical and electrical equipment.
c. Steel framing and supports for applications where framing and supports are not specified in other Sections; galvanized at exterior locations and in exterior walls.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Section 051200 - STRUCTURAL STEEL FRAMING for structural steel items.
2. Section 055150 - METAL RAILINGS for steel handrails and guardrails.
3. Section 099000 - PAINTING AND COATING for field painting work of this section.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design miscellaneous framing and supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

1.4 SUBMITTALS

A. Product Data: For each product.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.

1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
2. Provide templates for anchors and bolts specified for installation under other Sections.
3. Where fabrications are to receive sprayed-on fireproofing, include statement that primer is compatible with fireproofing proposed for use.

C. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

D. Welding certificates.

E. Qualification Data: For professional engineer.

1.5 QUALITY ASSURANCE

A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of metal fabrications that are similar to those indicated for this Project in material, design, and extent.

C. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code--Steel."
2. AWS D1.3, "Structural Welding Code--Sheet Steel."

D. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
2. Provide allowance for trimming and fitting at site.

1.7 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor

bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

C. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 FERROUS METALS

A. Recycled Content of Steel Products: Provide products with average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

C. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.

D. Steel Tubing: ASTM A 500, cold-formed steel tubing.

E. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

F. Slotted Channel Framing: Cold-formed metal channels with continuous slot complying with MFMA-4.

1. Basis of Design: Unistrut Corp.

2.2 FASTENERS

A. General: Unless otherwise indicated, provide Type 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.

B. Anchor Bolts: ASTM F 1554, Grade 36. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

C. Cast-in-Place Anchors in Concrete: Anchors capable of sustaining, without failure, a load equal to four times the load imposed, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.

D. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency. Anchors shall have an ICC-ES report with approval for use in cracked concrete.

1. Acceptable Manufacturers: Kwik-Bolt TZ by Hilti, Inc., TruBolt Wedge Anchor by ITW Red Head, Power-Stud+ by Powers Fasteners, or Strong Bolt by Simpson.

E. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches by length indicated with anchor straps or studs not less than 3 inches long at not more than 8 inches o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B 633, Class Fe/Zn 5, as needed for fastening to inserts.

2.3 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

C. Zinc-Rich Primer: Urethane zinc-rich primer compatible with topcoat Specified in Section 099000 - PAINTS AND COATINGS.

1. Available Products: Tnemec; Series 394 PerimePrime, or approved equal.
2. VOC Content: 250 g/L or less.

D. Galvanizing Repair Paint: High-zinc-dust-content (95% by weight) paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

1. Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Duncan Galvanizing; ZiRP.
   b. ZRC Worldwide; Galvilite Galvanizing Repair, low VOC type.
2. VOC Content: 250 g/L or less.

E. Isolation Coating (Bituminous Paint): ASTM D 1187, cold-applied asphalt emulsion, VOC compliant, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

F. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

1. Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Dayton Superior; 1107 Advantage Grout.
   b. Sika; SikaGrout 212.
2. VOC Content: 0 g/L.

2.4 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.5 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.

1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts if units are installed after concrete is placed.

2.6 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

2.7 STEEL PRIMERS AND FINISHES

A. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:

1. Exteriors (SSPC Zone 1B) and Items Indicated to Receive Zinc-Rich Urethane Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. Interiors (SSPC Zone 1A): SSPC-SP 7, "Brush Off Blast Cleaning."
3. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be field welded, embedded in concrete or masonry, unless otherwise indicated. Extend priming of partially embedded members to a depth of 2 inches.
4. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
5. Comply with SSPC-PA 2, "Measurement of Dry Coating Thickness with magnetic Gages."

B. Zinc-Rich Primer: Urethane zinc-rich primer compatible with topcoat Specified in Section 099000 - PAINTS AND COATINGS.

1. Available Products: Tnemec; Series 394 PerimePrime, or approved equal.
2. VOC Content: 340 g/L or less.

2.8 HOT-DIP GALVANIZING

A. Hot-Dip Galvanizing: For steel exposed to the elements, weather or corrosive environments and other steel indicated to be galvanized, provide coating for iron and steel fabrications applied by the hot-dip process.

1. Basis-of-Design: Duragalv by Duncan Galvanizing.
2. Comply with ASTM A 123 for fabricated products and ASTM A 153 for hardware.
3. Provide thickness of galvanizing specified in referenced standards.
4. Galvanizing bath shall contain special high grade zinc and other earthly materials.
5. Fill vent holes after galvanizing, if applicable, and grind smooth.

2.9 HOT-DIP GALVANIZING AND FACTORY-APPLIED PRIMER

A. Hot-Dip Galvanizing: For steel exposed to the elements, weather or corrosive environments and other steel indicated to be galvanized, provide coating for iron and steel fabrications applied by the hot-dip process.

1. Basis-of-Design: Duragalv by Duncan Galvanizing.
2. Comply with ASTM A 123 for fabricated products and ASTM A 153 for hardware.
3. Provide thickness of galvanizing specified in referenced standards.
4. Galvanizing bath shall contain special high grade zinc and other earthly materials.
5. Fill vent holes after galvanizing, if applicable, and grind smooth.

B. Factory-Applied Primer over Galvanized Steel: Provide factory-applied prime coat, certified OTC/VOC compliant less than 2.8 lbs/gal. and conforming to EPA and local requirements. Apply primer within 12 hours after galvanizing at the same galvanizer's plant in a controlled environment meeting applicable environmental regulations and as recommended by the primer coating manufacturer. Primer coat shall exhibit a rugosity (smoothness) not greater than 4 rug (16-20 microns of variation) when measured by a profilometer over a 1 inch straight line on the surface of architectural and structural elements that are less than 24 pounds per running foot.

Profilometer shall be capable of operating in 1 micron increments. Blast cleaning of the surface is unacceptable for surface preparation. Primer shall have a minimum two year re-coat window for application of finish coat. Coatings must meet or exceed the following performance criteria as stipulated by the coatings manufacturer:

1. Basis-of-Design: Primergalv by Duncan Galvanizing.
2. Abrasion Resistance: ASTM D 4060 (CS17 Wheel, 1,000 grams load).1kg load, 200 mg loss.
3. Adhesion: ASTM D4541, 1050 psi.
4. Corrosion Weathering: ASTM D5894, 13 cycles, 4,368 hours; rating 10 per ASTM D714 for blistering and rating 7 per ASTM D610 for rusting.
5. Direct Impact Resistance: ASTM D2794, 160 in. lbs.
6. Flexibility: Method: ASTM D522, 180 degree bend, 1 inch mandrel, passes.
7. Pencil Hardness: ASTM D3363, 3B.
8. Moisture Condensation Resistance: ASTM D4585, 100 degrees F, 2000 hours; passes, no cracking or delamination.
9. Dry Heat Resistance: Method: ASTM D2485, 250 degrees F.
10. Warranty: Provide galvanizer's warranty that materials will be free from 10 percent or more visible rust for a period of 20 years.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of steel that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of isolation coating.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

3.3 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Touch-Up and Repair for Galvanized Surfaces: For damaged and field-welded metal coated surfaces, clean welds, bolted connections and abraded areas.

1. For galvanized surfaces, apply organic zinc repair paint complying with requirements of ASTM A 780, modified to 95 percent zinc in dry film. Thickness of applied galvanizing repair paint shall be not less than coating thickness required by ASTM A 123 or A 153 as applicable. Touch-up of galvanized surfaces with silver paint, brite paint, or aluminum paints is not acceptable.
2. For factory-applied finish coatings, field-touch-up shall be performed by factory approved personnel. Touch-up shall be such that repair is not visible from a distance of 6 feet.
3. A touch-up repair kit or touchup instructions shall be provided to the Owner for each type of factory-applied finish.

END OF SECTION

SECTION 055150

METAL RAILINGS

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Steel handrails, guardrails, and railings, at interior and exterior locations.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

~~1. Section 033000 - CAST-IN-PLACE CONCRETE for sleeves, anchors, inserts, plates and similar items.~~
2. Section 061000 - ROUGH CARPENTRY for wood blocking for anchoring railings.
3. Section 099000 - PAINTING AND COATING for field painting work of this section.

1.3 DEFINITIONS

A. Railings: Guards, handrails, and similar devices used for protection of occupants at open-sided floor areas, pedestrian guidance and support, visual separation, or wall protection.

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance of Railings: Provide railings capable of withstanding the effects of gravity loads and Code required loads and stresses within limits and under conditions indicated:

C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.5 SUBMITTALS

A. Product Data: For metal railings and the following:

1. Paint products, including printed statement of VOC content.
2. Grout, including printed statement of VOC content.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Provide templates for anchors and bolts specified for installation under other Sections.

C. Delegated-Design Submittal: For stairs and railings indicated to comply with performance requirements and design criteria, including structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

D. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.

E. Welding certificates.

F. Qualification Data: For professional engineer.

1.6 QUALITY ASSURANCE

A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of metal stairs and railings that are similar to those indicated for this Project in material, design, and extent.

C. Installer Qualifications: Fabricator of products.

D. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code--Steel."
2. AWS D1.3, "Structural Welding Code--Sheet Steel."

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on Shop Drawings.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating railings without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION AND SCHEDULING

A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Brackets, Flanges, and Anchors: Same metal and finish as supported rails, unless otherwise indicated.

1. Provide cast-metal brackets with flange tapped for concealed anchorage to threaded hanger bolt.
2. Provide either formed- or cast-metal brackets with predrilled hole for exposed bolt anchorage.

2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel Tubing: ASTM A 500 (cold formed) or ASTM A 513, Type 5 (mandrel drawn)]

C. Uncoated, Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M[either commercial steel, Type B, or structural steel, Grade 30, unless another grade is required by design loads.

D. Galvanized Steel Sheet: ASTM A 653/A 653M, G90 coating, either commercial steel, Type B, or structural steel, Grade 33, unless another grade is required by design loads.

2.3 FASTENERS

A. General: Provide stainless steel Type 316 for exterior use and where built into exterior walls. Select fasteners for type, grade, and class required.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Shop Primers: Provide primers that comply with Section 099000 - PAINTING AND COATING.

C. Zinc-Rich Primer: Complying with SSPC-Paint 20 or SSPC-Paint 29 and compatible with topcoat.

1. Available Products: Dupont Ganicin, Keeler and Long Urethane Zinc Rich Primer, or Tnemec Series 394 PerimePrime.

D. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

1. Provide interior, field-applied paint with a VOC content of 250 g/L or less, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

F. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.5 FABRICATION, GENERAL

A. Provide complete assemblies, including metal framing, railings, clips, brackets, bearing plates, and other components necessary to support and anchor railings to supporting structure.

1. Join components by welding, unless otherwise indicated.
2. Use connections that maintain structural value of joined pieces.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.

E. Weld connections to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Weld exposed corners and seams continuously, unless otherwise indicated.
5. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate joints that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

2.6 METAL RAILINGS

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of tube, post spacings, and anchorage, but not less than that needed to withstand indicated loads.

B. Welded Connections: Fabricate railings with welded connections. Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

C. Form changes in direction of railings as detailed on the Drawings.

D. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

E. Close exposed ends of railing members with prefabricated end fittings.

F. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

G. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.

1. Connect posts to stair framing by direct welding, unless otherwise indicated.
2. For galvanized railings, provide galvanized fittings, brackets, fasteners, sleeves, and other ferrous-metal components.
3. For nongalvanized railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and concrete construction.

H. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports. Size fillers to suit wall finish thicknesses and to produce adequate bearing area to prevent bracket rotation and overstressing of substrate.

2.7 STEEL FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal railings after assembly.

C. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:

1. ASTM A 123/A 123M, for galvanizing steel and iron products.
2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.

D. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed products:

E. Apply shop primer to uncoated surfaces of metal railing components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal railings to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal railings. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.

C. Install metal railings by welding railing framing to steel structure or to weld plates cast into concrete, unless otherwise indicated.

D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

F. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

3.2 INSTALLING METAL RAILINGS

A. Adjust railing systems before anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated or, if not indicated, as required by design loads. Plumb posts in each direction. Secure posts and rail ends to building construction as follows:

1. Anchor posts to steel by welding directly to steel supporting members.
2. Anchor handrail ends to concrete and masonry with steel round flanges welded to rail ends and anchored with postinstalled anchors and bolts.

B. Attach handrails to wall with wall brackets. Provide bracket with 1-1/2-inch clearance from inside face of handrail and finished wall surface. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads. Secure wall brackets to building construction as follows:

1. Use type of bracket with flange tapped for concealed anchorage to threaded hanger bolt.
2. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
3. For hollow masonry anchorage, use toggle bolts.

4. For steel-framed gypsum board assemblies, fasten brackets directly to steel framing or concealed steel reinforcements using self-tapping screws of size and type required to support structural loads.

3.3 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

C. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in field to shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION

SECTION 061000

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Wood blocking, cants, and nailers.
2. Plywood backing panels.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. ~~Section 061600 - SHEATHING for plywood and OSB sheathing.~~
2. Section 064020 - INTERIOR ARCHITECTURAL WOODWORK for interior woodwork not specified in this Section.
3. Section 092110 - GYPSUM BOARD ASSEMBLIES for sheet metal backing.

1.3 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

1. Indicate component materials and dimensions and include construction and application details.
2. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
3. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials, both before and after exposure to elevated temperatures when tested according to ASTM D 5516 and ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that

periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
3. Provide dressed lumber, S4S, unless otherwise indicated.
4. Provide dry lumber with 15 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.

B. Plywood Panels:

1. Plywood: Either DOC PS 1 or DOC PS 2, unless otherwise indicated.
2. Thickness: As needed to comply with requirements specified but not less than thickness indicated.
3. Factory mark panels according to indicated standard.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.

a. Use Borate or Copper Azule treatments. Product shall not contain creosote, arsenic or pentachlorophenol.

2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry material after treatment to a maximum moisture content of 19 percent for lumber and 18 percent for plywood. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete in exterior walls.

E. Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Hoover Treated Wood Products; PyroGuard.
2. Koppers Performance Chemicals; LifeWood MicroPro Treatment.
3. Sustainable Northwest Wood; Pressure Treated Wood with Copper Azule.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: For all interior use materials, and where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Treatment shall not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
4. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664 and design value adjustment factors shall be calculated according to ASTM D 6841.
5. Product shall not contain creosote, arsenic or pentachlorophenol.

C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

2.4 MISCELLANEOUS LUMBER

A. General: Provide FRTW lumber for support or attachment of other construction, including, but not limited to, the following: Rooftop equipment bases and support curbs, blocking, cants, nailers, furring and grounds.

B. For items of dimension lumber size, provide Construction, Stud, or No. 2 grade lumber with 15 percent moisture content.

2.5 PANEL PRODUCTS

A. Miscellaneous Concealed Plywood: Exposure 1 sheathing, span rating to suit framing in each location, and thickness as indicated but not less than 1/2 inch.

B. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 1/2 inch thick.

2.6 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.

B. Nails, Wire, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Wood Screws: ASME B18.6.1.

E. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A with ASTM A 563 hex nuts and, where indicated, flat washers.

G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5; except provide stainless steel complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2, where in contact with pressure-preservative treated wood or when exposed to exterior conditions.

2.7 MISCELLANEOUS MATERIALS

A. Adhesive, Including Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

1. Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Henkel Corp.; Loctite PL Premium Polyurethane Construction Adhesive.
b. Henkel Corp.; OSI SF450 Heavy Duty Subfloor Construction Adhesive.

2. Low-Emitting Materials: Provide adhesives in compliance with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation

of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
3. VOC Content: 70 g/L or less.
4. Do not use adhesives that contain urea formaldehyde.
5. Methylene chloride and perchloroethylene may not be intentionally added to adhesives.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

C. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.

D. Securely attach carpentry work as indicated and according to applicable codes and the following:

1. Table 2304.10.1, "Fastening Schedule," in ICC's International Building Code (IBC).
2. ICC-ES evaluation report for fastener.

E. Countersink fastener heads on exposed carpentry work and fill holes with wood filler.

F. Use fasteners of appropriate type and length. Predrill members when necessary to avoid splitting wood.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install as required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

END OF SECTION

SECTION 062010

EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Exterior wood siding, soffits, and trim.
2. Exterior wood door frames.
3. Exterior wood decks.
4. ~~Exterior building signage.~~

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:
1. ~~Section 061600 - SHEATHING for sheathing substrate for air barrier system.~~
2. Section 072100 - THERMAL INSULATION for insulation in studs.
3. ~~Section 072700 - AIR BARRIERS for fluid-applied air barriers and membrane~~ flashings.
4. ~~Section 076200 - SHEET METAL FLASHING AND TRIM for metal flashings.~~
5. Section 079200 - JOINT SEALANTS for field-applied sealants not otherwise specified in this Section.
6. Section 081430 - STILE AND RAIL WOOD DOORS for doors installed in wood door frames.
7. Section 099000 - PAINTING AND COATING for field-finishing work of this Section.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Indicate location and nailing pattern for exposed surface nailing, as required by project conditions.

C. Samples for Verification: For each type, color, texture, and pattern required.

1. 12-inch-long-by-actual-width Sample of siding, soffits and trim.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

B. Mock-Up: Mock-up of exterior wall including wood siding is required. Comply with requirements of Section 014330 - MOCKUPS.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1. Meet with the Owner Project Manager; Architect, Owner insurer if applicable; testing and inspecting agency representative; siding Installer; siding manufacturer's senior representative; sheathing and air barrier Installer; and installers whose work interfaces with or affects siding, including installers of windows and doors.
2. Review methods and procedures related to siding installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine substrate conditions for compliance with requirements, including flatness and fastening.
5. Review flashings, special siding details, siding penetrations, trim installation, and finishes.
6. Review temporary protection requirements for siding during and after installation.
7. Review siding observation and repair procedures after siding installation.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials in a dry, well-ventilated, weathertight place.

1.6 PROJECT CONDITIONS

A. Weather Limitations: Proceed with siding installation only if substrate is completely dry and if existing and forecasted weather conditions permit siding to be installed according to manufacturer's written instructions.

1.7 SEQUENCING

A. Coordinate installation with flashings and other adjoining construction to ensure proper sequencing.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace siding that does not comply with requirements or that fails within specified warranty period. Failures include, but are not limited to, cracking, deforming, fading, or otherwise deteriorating beyond normal weathering.

1. Fading is defined as loss of color, after cleaning with product recommended by manufacturer, of more than Hunter color-difference units as measured according to ASTM D 2244.
2. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," for lumber and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee Board of Review.

B. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.

1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps entirely and provide certificates of grade compliance issued by inspection agency.

2.2 ACCESSORIES

A. Blocking, Shims, and Nailers: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.

B. Flashing: Provide metal flashing complying with Section 076200 - SHEET METAL FLASHING AND TRIM at window and door heads and where indicated.

C. Screws: Select material, type, size, and finish required for each use, nonferrous metal or hot-dip galvanized, unless otherwise indicated. Comply with ASME B18.6.1 for applicable requirements.

1. For fastening to metal, use ribbed bugle-head screws of sufficient length to penetrate a minimum of 1/4 inch or 3 screw-threads into substrate.

2.3 FABRICATION

A. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to relative humidity conditions existing during time of fabrication and in installation areas.

B. Fabricate woodwork to dimensions, profiles, and details indicated.

C. Complete fabrication, including assembly, finishing, and hardware application, before shipment to Project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

D. Shop-cut openings, to maximum extent possible, to receive hardware, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Smooth edges of cutouts and seal edges with the linseed-based wood stain selected for the exposed face.

2.4 EXTERIOR SIDING AND SOFFITS

A. Provide Red Cedar siding, Clear Grade, absolutely no knots, Plain Sawn:

1. Exposure: As indicated.
2. Sizes and Shapes: Custom milled as indicated on the Drawings.

2.5 EXTERIOR WOOD DOOR FRAMES FOR OPAQUE FINISH

A. Grade: Custom.

B. Wood Species: Mahogany.

2.6 BUILDING SIGNAGE

A. Provide Red Cedar sign painted in configuration as indicated on Drawings.

2.7 WOOD DECKING

A. Board Decking: Radius-edged board decking:

1. Species: Western Red Cedar, Select Dex, WCLIB.
2. Profiles: As indicated on Drawings.
3. Maximum Moisture Content: 15 percent.
4. Finish: Field finished.

2.8 SHOP PAINT

A. Linseed Based Wood Stains: Provide products of one of the following manufacturers that meet or exceed specified requirements:

1. Samuel Cabot, Inc. (Cabot) "Clear Solutions," "Bleaching Oil 6241"
2. Olympic Stain. (Olympic) "Weathering Stain" 350 g/l VOC max.

B. Application: Provide one coat of stain on all sides of each piece, at spreading rate recommended by stain manufacturer for exterior wood siding, soffits, and trim. Color shall match Architect’s sample.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of siding and related accessories.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

3.3 INSTALLATION

A. General: Comply with siding manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.

1. Do not install damaged components.
2. Center nails in elongated nailing slots without binding siding to allow for thermal movement.
3. Cut edges shall be sealed with wood stain selected for the exposed face finish.

B. Dress and sand finish carpentry work free from machine and tool marks, mill glaze, abrasions, raised grain, or other defects on surfaces exposed to view.

C. Provide tight joints formed to conceal shrinkage. Fit butt joints with concealed spline. Glue and dowel shop miters which are four inches or greater. Glue and spline miters less than 4 in., with spline concealed.

D. Blind nail work to the greatest extent possible. Where surface nailing is required by project conditions, set and fill nails to match adjacent wood. Surface nailing shall be done with nails equally spaced, vertically and horizontally aligned.

1. Provide concealed nailing as specified. Nail shall be in tongue of siding in a position where it will not be visible in the reveal when the next board is installed.
2. Where exposed surface nailing is required by project conditions, Architect shall approve location and nailing pattern.

E. Install joint sealants as specified in Section 079200 - JOINT SEALANTS and to produce a weathertight installation.

3.4 ADJUSTING AND CLEANING

A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.

B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION

SECTION 062316
WOOD STAIR TREADS AND RISERS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
1. New solid wood stair treads.
2. New solid wood stair risers.
3. Scotia mould at tread nosings.
4. Accessories required for fastening, assembly, and finishing.

B. Project Context:
1. Work under this Section is part of a historic rehabilitation project of an existing wood-framed building.
2. Stair construction shall be compatible with historic detailing while complying with applicable building codes.

C. Related Sections:
1. Section 096400 – Wood Flooring (for finish coordination).
2. Section 061000 – Rough Carpentry (for stair framing and substrates).

1.2 REFERENCES

A. National Wood Flooring Association (NWFA):
1. NWFA Guidelines for Installation of Wood Stair Treads and Risers, current edition.

B. ASTM International:
1. ASTM D4442 – Measurement of Moisture Content in Wood.

1.3 DEFINITIONS

A. Tread: Horizontal walking surface of stair.

B. Riser: Vertical face between adjacent treads.

C. Scotia Mould: Concave moulding installed beneath tread nosing at riser face.

1.4 SUBMITTALS

A. Product Data:
1. Species, thickness, profiles, and moulding details.

B. Shop Drawings:
1. Tread nosing profile and overhang dimension.
2. Scotia mould profile and location.

C. Samples:
1. Minimum 12-inch-long Red Oak tread sample showing nosing profile.
2. Sample of Red Oak scotia mould.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications:
1. Minimum 5 years experience fabricating wood stair components.

B. Installer Qualifications:
1. Minimum 3 years experience installing solid wood stair systems.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver stair components wrapped and protected from moisture and damage.

B. Store materials in dry, conditioned interior space.

C. Acclimate materials in installation area for a minimum of 7 days prior to installation.

1.7 PROJECT CONDITIONS

A. Environmental Conditions:
1. Maintain interior temperature between 60°F and 80°F.
2. Maintain relative humidity between 30 and 55 percent before, during, and after installation.

B. Field Measurements:
1. Verify actual stair framing dimensions prior to fabrication.

PART 2 – PRODUCTS

2.1 WOOD STAIR TREADS

A. Species:
1. Red Oak.

B. Construction:
1. Solid wood.

C. Dimensions:
1. Thickness: 1 inch nominal.
2. Depth: As required for code-compliant tread run.
3. Nosing overhang: 1 inch beyond face of riser.

D. Edge Profile:
1. Rounded nosing profile, smooth and uniform.

E. Surface:
1. Sanded smooth, ready for finish.

2.2 WOOD STAIR RISERS

A. Species:
1. Red Oak.

B. Construction:
1. Solid wood.

C. Thickness:
1. 3/4 inch nominal, unless otherwise indicated.

D. Configuration:
1. Closed risers throughout stair assembly.

E. Surface:
1. Smooth, ready for finish.

2.3 SCOTIA MOULD

A. Species:
1. Red Oak.

B. Profile:
1. Concave scotia mould.

C. Size:
1. 5/8 inch nominal.

D. Location:
1. Installed continuously beneath tread nosing at face of riser.

2.4 FLOOR FINISH MATERIALS

A. Finish System:
1. Water-based polyurethane floor finish.

B. Basis-of-Design Product:
1. Vermont Natural Coatings PolyWhey® Floor Finish – Satin.

C. Performance Requirements:
1. Low-VOC formulation suitable for historic interior applications.
2. Compatible with Red Oak.
3. Satin sheen level.

D. Substitutions:
1. No substitutions permitted without Architect’s written approval.

2.5 ACCESSORIES

A. Fasteners:
1. Concealed screws, plugs, or biscuits suitable for stair construction.
2. Corrosion-resistant.

B. Adhesives:
1. Construction adhesive compatible with wood substrates.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify stair framing is:
1. Structurally sound.
2. Secure and properly aligned.
3. Within tolerances required for wood stair construction.

B. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Clean substrates of dust and debris.

B. Verify riser heights and tread runs comply with applicable building code requirements.

3.3 INSTALLATION – GENERAL

A. Install treads and risers in accordance with NWFA guidelines and manufacturer recommendations.

B. Provide tight joints, consistent alignment, and smooth transitions.

C. Allow for wood movement without splitting or distortion.

3.4 INSTALLATION – TREADS, RISERS, AND MOULD

A. Install closed risers tight to framing and secure against movement.

B. Install treads with 1-inch nosing overhang beyond face of riser.

C. Fastening:
1. Do not use visible face fasteners.
2. Secure treads and risers using concealed fasteners, plugs, or concealed mechanical systems.

D. Install 5/8-inch Red Oak scotia mould continuously beneath tread nosing at riser face.

3.5 FLOOR FINISHING

A. Surface Preparation:
1. Sand stair components uniformly to remove milling marks and minor irregularities.
2. Remove dust completely prior to finish application.

B. Finish Application:
1. Apply Vermont Natural Coatings PolyWhey® Floor Finish – Satin strictly in accordance with manufacturer’s written instructions.
2. Apply recommended number of coats to achieve uniform appearance and durability.
3. Lightly abrade between coats as recommended.

C. Environmental Conditions:
1. Maintain temperature and humidity within manufacturer’s recommended limits during finishing and curing.

3.6 FIELD QUALITY CONTROL

A. Verify:
1. Secure attachment of treads and risers.
2. Uniform nosing profile and overhang.
3. Absence of squeaks, movement, or deflection.

B. Correct deficiencies prior to Owner occupancy.

3.7 PROTECTION

A. Protect installed stair components from damage during construction.

END OF SECTION

SECTION 064020

INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Interior standing and running trim.
2. Interior frames and jambs.
3. Stairwork and rails.
4. Wood casework.
5. ~~Plastic-laminate countertops.~~
6. Solid-surfacing-material countertops.
7. Remodeling of existing architectural woodwork.
8. Shop finishing of interior woodwork.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Section 061000 - ROUGH CARPENTRY for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
2. Section 064200 - PANELING for wood paneling.
3. Section 081430 - STILE AND RAIL WOOD DOORS for doors installed in wood door frames.
4. Section 099000 – PAINTING AND COATING for field finishing work of this Section.
5. Section 123570 – RESIDENTIAL CASEWORK for residential cabinets.

1.3 SUBMITTALS

A. Product Data: For each type of product specified, including casework hardware and accessories, and finishing materials and processes.

1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.

a. Provide schedule of blocking required to support the Work of this Section.

2. Show locations and sizes of cutouts and holes for plumbing fixtures, electrical components and other items installed in architectural woodwork.
3. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

C. Samples for Verification:

1. Lumber with or for transparent finish, not less than 5 inches wide by 12 inches long for each species and cut, finished on 1 side and 1 edge.
2. Veneer leaves representative of and selected from flitches to be used for transparent-finished woodwork.

a. Submit step-type range sample sets of factory finished plywood and factory finished solid wood in size illustrating wood grain and specified finish, including edge banding detail and any veneer or solid edge glue joints.
b. Submit one leaf for every 1000 gross square foot of veneer required.

3. Plastic laminates, 8 by 10 inches for each type, color, pattern, and surface finish, with 1 sample applied to core material, and specified edge material applied to 1 edge.
4. Solid-surfacing materials, 6 inches square.

D. Qualification Data: For Installer and fabricator.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork with blueprint-matched wood veneers and components.

C. Quality Standard: Unless otherwise indicated, comply with AWI/AWMAC/WI's "Architectural Woodwork Standards," latest edition, including errata, for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

D. Fire-Test-Response Characteristics: Where fire-retardant materials or products are indicated, provide materials and products with specified fire-test-response characteristics as determined by testing identical products per test method indicated by UL, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.

E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

1. The HVAC systems as specified elsewhere may not provide for humidity controls. The expected ranges of relative humidity are expected to be as high as 55% to a low of uncontrolled during the heating system. Comply with AWS Section 2, Care and Storage.

B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.
2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.7 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that comply with requirements of AWI/AWMAC/WI's "Architectural Woodwork Standards" for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Recycled Content of Medium-Density Fiberboard and Particleboard: Provide products with an average recycled content so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

C. Wood Veneers and Lumber: Provide AWI Custom Grade materials and workmanship, unless otherwise indicated. For species not listed in the AWS comply with the following:

1. Provide AWI Lumber Grade 1 and AWI Grade A Veneer, book-matched, minimum 6 inch face veneer width. Kiln dry to 6-8 percent moisture content. Components shall be free of defects and sapwood. Match adjacent pieces for color and grain pattern.
2. Single-Source Requirement for Wood Veneers and Solids: Intent is to provide wood which matches as closely as possible throughout the project. Provide wood veneers and solids from the same distributor, and from the same flitches and solids sources to the greatest extent possible.

D. Wood Species and Cut for Transparent Finish: As selected by the Architect.

1. Architect's control samples for transparent finish, veneer grain and figure characteristics are available for review at the office of the Architect.
2. Veneer Matching Requirements:

    a. Matching Between Adjacent Veneer Leaves: Book match and architectural end match.
    b. Matching Within Individual Panel Faces: Balance and Center Match.
    c. Method of Matching Panels: Blueprint-matched panels and components.

E. Wood Species for Opaque Finish: Any closed-grain hardwood.

F. Composite Wood Products: Comply with the following:

1. Composite Wood, General: CARB II compliant or made with binder containing no added formaldehyde (NAF).
2. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade MD.
3. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
4. Softwood Plywood: DOC PS 1, Medium Density Overlay (MDO).
5. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.

    a. Resin impregnated paper backs are not permitted. Backs shall be of compatible hardwood species and cut. Contact adhesive is not permitted.

~~G. High-Pressure Decorative Plastic Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.~~

~~1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering high-pressure decorative laminates that may be incorporated into the Work include, but are not limited to, the following:~~

~~a. Abet Laminati, Inc.~~
~~b. Arborite; a division of Wilsonart.~~
~~c. Formica Corporation.~~
~~d. Lamin-Art; a division of Wilsonart.~~
~~e. Nevamar, Panolam, and Pionite; divisions of Panolam Surface Systems.~~
~~f. Wilsonart LLC.~~

H. Solid-Surfacing Material: Homogeneous solid sheets of filled plastic resin complying with ISFA-2.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Avonite Surfaces; Aristech Surfaces.
b. E. I. du Pont de Nemours and Company; Corian.
c. Formica Corporation.
d. LG Hausys; Hi-Macs.
e. Wilsonart LLC.

I. Tempered Float Glass for Casework: ASTM C 1048, Kind FT, Condition A, Type I, Class 1 (clear), Quality-Q3, with exposed edges seamed before tempering, 1/4 inch (6 mm) thick, unless otherwise indicated.

2.2 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this Article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified.

1. Do not use treated materials that do not comply with requirements of referenced woodworking standard or that are warped, discolored, or otherwise defective.
2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
3. Identify fire-retardant-treated materials with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Comply with performance requirements of AWPA C20 (lumber) and AWPA C27 (plywood). Use the following treatment type:

1. Exterior Type: Organic-resin-based formulation thermally set in wood by kiln drying.
2. Mill lumber before treatment and implement special procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.
3. Kiln-dry materials before and after treatment to levels required for untreated materials.

C. Fire-Retardant Particleboard: Panels complying with the following requirements, made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 25 or less per ASTM E 84.

1. Fire-Retardant Fiberboard and Particleboard: Provide five ply construction with crossbands to prevent any ammonia fuming from the core to the face veneers.

2.3 CASEWORK HARDWARE AND ACCESSORIES

A. General: Provide casework hardware and accessory materials associated with architectural casework, except for items specified in Section 087100 - DOOR HARDWARE.

B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602,100 degrees of opening, self-closing.

C. Back-Mounted Pulls: BHMA A156.9, B02011.

D. Catches: Push-in magnetic catches, BHMA A156.9, B03131.

E. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081 or BHMA A156.9, B04102; with shelf brackets, B04112.

F. Drawer Slides: BHMA A156.9, B05091; side mounted and extending under bottom edge of drawer; full-extension type; epoxy-coated-steel with steel ball-bearings; of the following grades:

1. Box Drawer Slides: Grade 1.
2. File Drawer Slides: Grade 1HD-100.
3. Pencil Drawer Slides: Grade 2.
4. Keyboard Slides: Grade 1.
5. Trash Bin Slides: Grade 1HD-100.

G. Aluminum Slides for Sliding Glass Doors: BHMA A156.9, B07063.

H. Door Locks: BHMA A156.11, E07121.

I. Drawer Locks: BHMA A156.11, E07041.

J. Grommets for Cable Passage through Countertops: Molded-plastic grommets and matching plastic caps with slot for wire passage.

K. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.

1. Satin Stainless Steel: BHMA 630.
2. Satin Aluminum, Clear Anodized: BHMA 628.

L. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.4 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

C. Handrail Brackets: Cast from malleable iron with wall flange drilled [for exposed anchor and with support arm for screwing to underside of rail. Sized to provide 1-1/2-inch clearance between handrail and wall.

D. Installation Adhesives and Wood Glues: Formulations approved for use indicated by adhesive manufacturer.

1. Low-Emitting Materials: Provide adhesives in compliance with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2. VOC Limits: Use installation adhesives that comply with the following limits for VOC content:

   a. Wood Glues: 30 g/L.
   b. Contact Adhesives: Not permitted on the Project without Architect's prior approval.

3. Do not use adhesives that contain urea formaldehyde.
4. Methylene chloride and perchloroethylene may not be intentionally added to adhesives.

2.5 FABRICATION, GENERAL

A. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

B. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:

1. Corners of Casework and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch.

D. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

E. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

1. Seal edges of openings in countertops with a coat of varnish.

F. Install glass to comply with applicable requirements in Section 088000 - GLAZING and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.

2.6 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

A. Grade: Custom.

B. Wood Species: Any closed-grain hardwood.

C. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.

D. Assemble casings in plant except where limitations of access to place of installation require field assembly.

2.7 INTERIOR FRAMES AND JAMBS FOR OPAQUE FINISH

A. Grade: Custom.

B. Wood Species: Any closed-grain hardwood.

2.8 STAIRWORK AND RAILS

A. Grade: Custom.

B. Wood Species and Cut for Transparent Finish: As specified hereinabove.

C. Wood Species for Opaque Finish: Any closed-grain hardwood, except that eastern white pine, sugar pine, or western white pine may be used for risers, stringers, and moldings.

D. Finishes for Stair Parts: As follows:

1. Treads: Transparent.
2. Risers: Opaque.
3. Stringers: Opaque.
4. Balusters: Opaque.
5. Handrails: Transparent.
6. Cove and Other Moldings: Opaque.

E. Cut carriages to accurately fit treads and risers. Glue treads to risers, and glue and nail treads and risers to carriages.

1. House wall and face stringers and glue and wedge treads and risers.
2. Fabricate stairs with treads and risers no more than 1/8 inch from indicated position and no more than 1/16 inch out of position for adjacent treads and risers.

2.9 WOOD CASEWORK FOR TRANSPARENT FINISH

A. Basis of Design: Smart Cabinetry; Brighton.

B. Grade: Custom.

C. AWI Type of Casework Construction: Flush overlay.

D. Wood Species and Cut for Exposed Surfaces: As specified hereinabove.

1. Grain Direction: Vertically for drawer fronts, doors, and fixed panels.
2. Matching of Veneer Leaves: Book match.
3. Vertical Matching of Veneer Leaves: End match.
4. Veneer Matching within Panel Face: Running match.
5. Veneer Matching within Room: Provide casework veneers in each room or other space from a single flitch with doors, drawer fronts, and other surfaces matched in a sequenced set with continuous match where veneers are interrupted perpendicular to the grain.

E. Semiexposed Surfaces: Provide surface materials indicated below:

1. Surfaces Other Than Drawer Bodies: Compatible species to that indicated for exposed surfaces, stained to match.
2. Drawer Sides and Backs: Solid-hardwood lumber, stained to match species indicated for exposed surfaces.
3. Drawer Bottoms: Hardwood plywood.

2.10 WOOD CASEWORK FOR OPAQUE FINISH

A. Basis of Design: Smart Cabinetry; Brighton.

B. Grade: Custom.

C. AWI Type of Casework Construction: Flush overlay.

D. Species for Exposed Lumber Surfaces: Any closed-grain hardwood.

E. Panel Product for Exposed Surfaces: Medium-density overlay.

F. Semiexposed Surfaces: Provide surface materials indicated below:

1. Surfaces Other Than Drawer Bodies: Match materials indicated for exposed surfaces.
2. Drawer Sides and Backs: Solid-hardwood lumber.
3. Drawer Bottoms: Hardwood plywood.

2.11 PLASTIC-LAMINATE COUNTERTOPS

A. Grade: Custom.

B. High-Pressure Decorative Laminate Grade: HGS.

C. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As selected by Architect from manufacturer's full range.

D. Edge Treatment: As indicated.

E. Core Material: Exterior-grade plywood.

F. Backer Sheet: Provide plastic-laminate backer sheet, Grade BKL, on underside of countertop substrate.

2.12 SOLID-SURFACING-MATERIAL COUNTERTOPS

A. Grade: Custom.

B. Colors, Patterns, and Finishes: Provide materials and products that result in colors of solid-surfacing material complying with the following requirements:

1. As selected by Architect from manufacturer's full range.

C. Fabricate tops in one piece, unless otherwise indicated. Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.

1. Fabricate tops with shop-applied edges of materials and configuration indicated.
2. Fabricate tops with loose backsplashes for field application.

D. Drill holes in countertops for plumbing fittings and soap dispensers in shop.

2.13 SHOP FINISHING

A. General: Comply with AWI/AWMAC/WI's "Architectural Woodwork Standards" for factory finishing.

1. Finish architectural woodwork at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

B. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end-grain surfaces. Concealed surfaces of plastic-laminate-clad woodwork do not require backpriming when surfaced with plastic laminate, backing paper, or thermoset decorative panels.

C. Shop Priming: Shop apply the prime coat including backpriming, if any, for opaque-finished items specified to be field finished. Refer to Section 099000 - PAINTING AND COATING for material and application requirements.

D. Transparent Finish: Comply with requirements indicated below for grade, finish system, staining, and sheen with sheen measured on 60-degree gloss meter per ASTM D 523:

1. Grade: Same as item to be finished.
2. AWS Finish System 5: Conversion varnish.
3. Washcoat for Closed-Grain Woods: Apply washcoat sealer to woodwork made from closed-grain wood before staining and finishing
4. Staining: Match approved sample for color.
5. Open Finish for Open-Grain Woods: Do not apply filler to open-grain woods.
6. Sheen: Satin, 30-50 gloss units.
7. Effect: Partially filled pore.

E. Opaque Finish: Comply with requirements indicated below for grade, finish system, color, effect, and sheen, with sheen measured on 60-degree gloss meter per ASTM D 523.

1. Grade: Same as item to be finished.
2. AWS Finish System 5: Conversion varnish.
3. Color: As selected by Architect from manufacturer's full range.
4. Sheen: Satin, 30-50 gloss units.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.

B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.

B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.

C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.

F. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.

G. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.

1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base if finished.
2. Install wall railings on indicated metal brackets securely fastened to wall framing.
3. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.

H. Stairs: Securely anchor carriages to supporting substrates. Install stairs with treads and risers no more than 1/8 inch from indicated position.

I. Railings:

1. General: Install rails with no more than 1/8 inch in 96-inch variation from a straight line.
2. Stair Rails: Glue and dowel or pin balusters to treads and railings, and railings to newel posts.
3. Wall Rails: Support rails on indicated metal brackets securely fastened to wall framing.

J. Casework: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

1. Install casework with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
2. Maintain veneer sequence matching of casework with transparent finish.
3. Attach casework to walls with mechanical fasteners. Do not use adhesives, so that casework may be removed and salvaged in the future.

K. Countertops: Anchor securely by screwing through corner blocks of base casework or other supports into underside of countertop.

1. Align adjacent countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
3. Secure backsplashes to tops with concealed metal brackets at 16 inches and to walls with adhesive.
4. Calk space between backsplash and wall with sealant specified in Section 079200 - JOINT SEALANTS.

L. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION

SECTION 064200

PANELING

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Beadboard paneling at ADA restoom.
2. Shop finishing work of paneling.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Section 061000 - ROUGH CARPENTRY for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
2. Section 064020 - INTERIOR ARCHITECTURAL WOODWORK for trim at wood paneling.

1.3 DEFINITIONS

A. Paneling includes wood furring, blocking, and shims for installing paneling, unless concealed within other construction before paneling installation.

1.4 SUBMITTALS

A. Product Data: For each type of product specified, including cabinet hardware and accessories, and finishing materials and processes.

1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. Shop Drawings: Show location of paneling, large-scale details, attachment devices, and other components. Include dimensioned plans and elevations.

1. Show details full size.
2. Show locations and sizes of furring and blocking, including concealed blocking specified in other Sections.
3. For paneling produced from premanufactured sets, show finished panel sizes, set numbers, sequence numbers within sets, and method of cutting panels to produce indicated sizes.

4. For paneling veneered in fabrication shop, show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

C. Samples for Initial Selection:

1. Shop-applied transparent finishes.

D. Samples for Verification:

1. Lumber with or for transparent finish, not less than 5 inches wide by 12 inches long, for each species and cut, finished on 1 side and 1 edge.
2. Veneer leaves representative of and selected from flitches to be used for transparent-finished paneling.
3. Veneer-faced panel products with or for transparent finish, 12 by 24 inches, for each species and cut. Include at least one face-veneer seam and finish as specified.

E. Qualification Data: For Installer and fabricator.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork with sequence-matched wood veneers.

C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

D. Fire-Test-Response Characteristics: Where fire-retardant materials or products are indicated, provide materials and products with specified fire-test-response characteristics as determined by testing identical products per test method indicated by UL, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.

E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver paneling until painting and similar operations that could damage paneling have been completed in installation areas. If paneling must be stored in other than installation areas,

store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install paneling until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Field Measurements: Where paneling is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support paneling by field measurements before being enclosed and indicate measurements on Shop Drawings.
2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating paneling without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that paneling can be installed as indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that comply with requirements of AWI's quality standard for quality grade specified, unless otherwise indicated.

B. Recycled Content of Medium-Density Fiberboard and Particleboard: Provide products with an average recycled content so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

C. Wood Veneers and Lumber: Provide AWI Custom Grade materials and workmanship, unless otherwise indicated. For species not listed in the AWS comply with the following:

1. Provide AWI Lumber Grade 1 and AWI Grade A Veneer, book-matched, minimum 6 inch face veneer width. Kiln dry to 6-8 percent moisture content. Components shall be free of defects and sapwood. Match adjacent pieces for color and grain pattern.
2. Single-Source Requirement for Wood Veneers and Solids: Intent is to provide wood which matches as closely as possible throughout the project. Provide wood veneers and solids from the same distributor, and from the same flitches and solids sources to the greatest extent possible.

D. Wood Species for Opaque Finish: Any closed-grain hardwood.

E. Composite Wood Products: Comply with the following:

1. Composite Wood, General: CARB II compliant or made with binder containing no added formaldehyde (NAF).
2. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade MD.
3. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
4. Softwood Plywood: DOC PS 1, Medium Density Overlay (MDO).
5. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.

    a. Resin impregnated paper backs are not permitted. Backs shall be of compatible hardwood species and cut. Contact adhesive is not permitted.

F. Installation Adhesives and Wood Glues: Formulations approved for use indicated by adhesive manufacturer.

1. Low-Emitting Materials: Provide adhesives in compliance with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
2. VOC Content: Use installation adhesives that comply with the following limits:

    a. Wood Glues: 30 g/L.
    b. Contact Adhesives: Not permitted on the Project without Architect’s prior approval.

3. Do not use adhesives that contain urea formaldehyde.
4. Methylene chloride and perchloroethylene may not be intentionally added to adhesives.

2.2 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials that are acceptable to authorities having jurisdiction and that comply with requirements in this Article and with fire-test-response characteristics specified.

1. Do not use treated materials that do not comply with requirements of referenced woodworking standard or that are warped, discolored, or otherwise defective.
2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
3. Identify fire-retardant-treated materials with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Comply with performance requirements of AWPA C20 (lumber) and AWPA C27 (plywood). Use the following treatment type:

1. Exterior Type: Organic-resin-based formulation thermally set in wood by kiln drying.
2. Interior Type A: Low-hygroscopic formulation.
3. Mill lumber after treatment, within limits set for wood removal that do not affect listed fire-test-response characteristics, using a woodworking plant certified by testing and inspecting agency.
4. Mill lumber before treatment and implement special procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.
5. Kiln-dry materials before and after treatment to levels required for untreated materials.

C. Fire-Retardant Particleboard: Panels complying with the following requirements, made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 25 or less per ASTM E 84.

1. Arauco NA; Duraflake FR.
2. Or approved equal.
3. For panels 3/4 inch thick and less, comply with ANSI A208.1 for Grade M-2 except for the following minimum properties: modulus of rupture, 1600 psi; modulus of elasticity, 300,000 psi; internal bond, 80 psi; and screw-holding capacity on face and edge, 250 and 225 lbf, respectively.
4. For panels 13/16 to 1-1/4 inches thick, comply with ANSI A208.1 for Grade M-1 except for the following minimum properties: modulus of rupture, 1300 psi; modulus of elasticity, 250,000 psi; linear expansion, 0.50 percent; and screw-holding capacity on face and edge, 250 and 175 lbf , respectively.

2.3 INSTALLATION MATERIALS

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

B. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.

C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.4 FABRICATION, GENERAL

A. Paneling Grade: Provide Custom grade paneling complying with referenced quality standard.

B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

C. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

D. Arrange paneling in shop or other suitable space in proposed sequence for examination by Architect. Mark units with temporary sequence numbers to indicate position in proposed layout.

1. Lay out one elevation at a time if approved by Architect.
2. Notify Architect seven days in advance of the date and time when layout will be available for viewing.
3. Provide lighting of similar type and level as that of final installation for viewing layout, unless otherwise approved by Architect.
4. Rearrange paneling as directed by Architect until layout is approved.
5. Do not trim end units and other nonmodular size units to less than modular size until after Architect's approval of layout. Indicate trimming by masking edges of units with nonmarking material.
6. Obtain Architect's approval of layout before start of assembly. Mark units and Shop Drawings with assembly sequence numbers based on approved layout.

E. Complete fabrication, including assembly and finishing, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Notify Architect seven days in advance of the dates and times paneling fabrication will be complete.
2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on approved Shop Drawings before disassembling for shipment.

F. Shop cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

2.5 BOARD PANELING FOR OPAQUE FINISH

A. Grade: Custom.

B. Pattern: Beadboard, as indicated on Drawings.

C. Shop fabricate board paneling in lengths to provide pieces that are uninterrupted by joints. Machine edges of boards to provide joint profiles indicated.

D. Shop fabricate board paneling from boards of standard random lengths, complying with applicable grading rules. Machine edges and ends of boards to provide joint profiles indicated.

E. Preassemble board paneling into largest units that can be delivered into installation areas using permanent or temporary backing members as indicated. To maximum extent possible, fabricate units in sizes determined by field measurements of existing conditions and that will avoid fitting in the field; make provision for separate scribing pieces to be fitted to adjoining finished surfaces. Provide shop-prepared detachable pieces for forming joints with other units at Project site and with other types of architectural woodwork.

2.6 SHOP FINISHING

A. General: Comply with AWI/AWMAC/WI's "Architectural Woodwork Standards" for factory finishing.

1. Finish architectural woodwork at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

B. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end-grain surfaces.

C. Opaque Finish: Comply with requirements indicated below for grade, finish system, color, effect, and sheen, with sheen measured on 60-degree gloss meter per ASTM D 523.

1. Grade: Same as item to be finished.
2. AWS Finish System 5: Conversion varnish.
3. Color: As selected by Architect from manufacturer's full range.
4. Sheen: Satin, 30-50 gloss units.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition paneling to average prevailing humidity conditions in installation areas.

B. Before installing paneling, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

A. Grade: Install paneling to comply with requirements for same grade specified in Part 2 for fabrication of type of paneling involved.

B. Install paneling level, plumb, true, and straight with no distortions. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches. Install with no more than 1/16 inch in 96-inch vertical cup or bow and 1/8 inch in 96-inch horizontal variation from a true plane.

C. Scribe and cut paneling to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

D. Anchor paneling to supporting substrate with concealed panel-hanger clips. Do not use face fastening unless covered by trim.

E. Complete finishing work specified in this Section to extent not completed at shop or before installation of paneling. Fill nail holes with matching filler where exposed. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are applied in shop.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective paneling, where possible, to eliminate functional and visual defects; where not possible to repair, replace paneling. Adjust for uniform appearance.

B. Clean paneling on exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION

SECTION 064826
WOOD VENEER DOOR FRAMES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
1. Wood door frames
2. Factory prefitting and premachining
3. Fire ratings
4. Finishing

B. Related Sections:
1. Section 01 00 00 – General Requirements
2. Section 06 48 16 – Interior Wood Door Frames
3. Section 08 30 00 – Specialty Doors and Frames
4. Section 08 71 00 – Door Hardware Schedule
5. Section 09 00 00 – Finishes

1.2 REFERENCES

A. ANSI A208.1 – Urea-Formaldehyde Emissions
B. WDMA I.S.6-A-07 – Window and Door Manufacturers Association
C. Architectural Woodwork Institute (AWI), 8th Edition
D. NFPA 80 – Fire Doors and Windows
E. NFPA 252 – Standard Methods of Fire Tests for Fire Door Assemblies
F. UL 10C – Positive Pressure Fire Rated
G. QAI – Certification Listings for Fire Doors and Frames
H. Decorative Hardwoods Association – Veneer Grading
I. ADA Standards

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Show locations, elevations, dimensions, fire ratings, and preparation for hardware.

B. Warranty:
1. Materials shall be warrantied for two (2) years from time of delivery. See manufacturer’s warranty for scope, inclusions, and exclusions.

C. Samples:
1. Provide 12-inch sample if requested by Architect showing specified construction and stop detail.
2. For pre-finishing, submit veneer samples for review and approval.

D. Storage and Handling:
1. Do not deliver doors and frames until building is closed in from water and weather and HVAC system is operational.

2. Store and handle doors and frames in accordance with manufacturer's recommendations and WDMA standards.
3. Store doors and frames flat on a level surface in a well-ventilated, dry building. Protect from water and neglect. Do not expose to extreme heat or humidity.
4. Handle frames with clean hands or gloves. Do not drag across floors or other surfaces.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:

1. Grandoor Frames
   www.grandoorframes.com
   866-433-7263

2. Ferche Millwork
   400 Division Street North
   Rice, MN 56367
   Toll Free: 800.328.7867
   Telephone: 320.393.5700
   Fax: 320.393.5800
   Website: www.ferche.com
   E-mail: webmaster@ferche.com

3. Approved equal meeting design and performance standards of the basis of design and approved by Owner and Architect in accordance with Division 01. Single-source manufacturer must be capable of providing non-rated, fire-rated, and sound-rated wood door frames for continuity of design.

2.2 NON-RATED WOOD FRAMES

A. Coordinate wood frames with door schedule.

B. Core Material: Finger-joint pine or poplar, at manufacturer's discretion.

C. Wood veneers shall be A-grade per HPVA (Decorative Hardwoods Association).

D. Face Veneers: Minimum 1/42-inch thick; veneer must match fire-rated frames. Painted frames may use manufacturer-selected materials without additional veneer.

E. Frame Thickness: Standard 11/16 inch or 3/4 inch, or thicker as required.

F. Non-rated wood frames and doors shall be supplied and coordinated by one distributor.

2.3 FIRE-RATED WOOD FRAMES

A. Coordinate fire-rated frames with door schedule.

B. Core: Fire-rated core materials as required and as shown on drawings.

C. Fire-rated wood frames and doors shall be supplied and coordinated by one distributor.

D. Labels: Frames shall be labeled by an approved independent testing agency meeting UL standards.

E. Face Veneers: Match doors; minimum 1/42-inch thick. Painted frames may use manufacturer-selected veneer.

F. Edge Details: Edges shall match face veneer.

G. Thickness: 3/4 inch unless noted otherwise.

H. Stop Dimensions:
- Double rabbet: 5/8 inch high x 1-1/2 inch wide
- Single rabbet: 5/8 inch high x (wall dimension minus 1-7/8 inches)

I. STC Rating: Frames independently tested for sound transmission; preferred STC 35 (sealed condition). Provide test documentation.

J. Concealed Closers: Not applicable unless shown on drawings.

2.4 FACTORY PREFITTING AND PREMACHINING

A. Frames shall be premachined at the factory.
1. Machine frames in accordance with templates from specified hardware manufacturers and door hardware schedule. Machining shall be coordinated by distributor. Manufacturer may require physical hardware samples.

B. Tolerances: Comply with WDMA requirements for prefitting.

2.5 FACTORY FINISH

A. Veneered Frames: Clear-coated or stained by frame manufacturer. Finish to face and two edges.

B. Paint-Grade Frames: Factory primed on face and two edges. Sand prior to painting. Back-priming not provided unless specified.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions prior to installation. Notify Architect of conditions adversely affecting installation. Do not proceed until corrected.

B. Ensure frames are securely anchored to wall studs with no deflection.

C. Verify frames are plumb, level, square, and within tolerance.

3.2 PREPARATION

A. Condition doors and frames to average humidity anticipated after installation.

3.3 INSTALLATION

A. Install in accordance with AWI Section 1700 and manufacturer’s instructions.

B. Install frames plumb and level. Optional angle brackets may be used to secure frames to walls.

C. Replace one long screw through top hinge into wall stud.

D. If field cutting is required, cut bottom edge only and seal exposed surfaces to match finish.

E. Install door hardware in accordance with Section 08 71 00.

END OF SECTION

SECTION 072100
THERMAL INSULATION

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Thermal insulation for historic rehabilitation of an existing wood-framed building.
2. Dense-pack cellulose insulation at existing exterior wall cavities.
3. Acoustic batt insulation at interior floor assemblies.
4. Interior foundation wall insulation consisting of rigid insulation and framed batt insulation.
5. Closed-cell spray polyurethane foam insulation at roof assemblies.

B. Related Control Layers:

1. Smart vapor retarder membranes forming part of the interior air and vapor control layer are specified in Section 072600 – Smart Vapor Retarders.
2. Whole-building and assembly air leakage verification is specified in Section 014517 – Field Testing of Exterior Assemblies.

C. All insulation and air sealing work is performed from the interior side of the building.

1.2 REFERENCES

A. ASTM International:
1. ASTM C518 – Steady-State Thermal Transmission Properties.
2. ASTM C739 – Cellulosic Fiber Loose-Fill Thermal Insulation.
3. ASTM C665 – Mineral-Fiber Blanket Thermal Insulation.
4. ASTM C578 – Rigid Cellular Polystyrene Thermal Insulation.
5. ASTM E84 – Surface Burning Characteristics of Building Materials.
6. ASTM E96/E96M – Water Vapor Transmission of Materials.

B. CAN/ULC:
1. CAN/ULC-S705.2 – National Application Standard for Spray Applied Rigid Polyurethane Foam.

1.3 DEFINITIONS

A. Historic Rehabilitation: Alteration and upgrade of an existing historic building while retaining historic materials, features, and assemblies to the greatest extent practicable.

B. Dense-Pack Cellulose: Cellulose insulation installed at high density to reduce air movement within framing cavities.

1.4 SUBMITTALS

A. Product Data: Manufacturer’s data for each insulation type.

B. Installer Qualifications:

1. Documentation of experience installing specified insulation systems.
2. Spray foam installer certifications.

C. Sustainable Design Submittals: Recycled content documentation for cellulose and mineral wool insulation.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:
1. Minimum 3 years experience installing similar insulation systems.
2. Spray polyurethane foam installers shall be trained and certified by the manufacturer.

B. Regulatory Requirements:
1. Comply with applicable building code thermal and fire-performance requirements.

1.6 PROJECT CONDITIONS

A. Historic Fabric Protection:
1. Protect existing historic materials from damage during insulation installation.
2. Do not remove or alter historic framing except as required for installation.

B. Environmental Conditions:
1. Install insulation in accordance with manufacturer’s temperature and humidity limits.

PART 2 – PRODUCTS

2.1 DENSE-PACK CELLULOSE INSULATION

A. Manufacturers:
1. Applegate Insulation.
2. GreenFiber.
3. National Fiber.
4. Or approved equal.

B. Material:
1. Loose-fill cellulose insulation complying with ASTM C739.
2. Borate-treated for fire, insect, and mold resistance.

C. Performance:
1. Installed density: 3.4 pounds per cubic foot minimum.
2. Thermal resistance: Not less than R-3.7 per inch.

2.2 ACOUSTIC BATT INSULATION (FLOORS)

A. Manufacturers:
1. Owens Corning.
2. Johns Manville.
3. Rockwool.
4. Or approved equal.

B. Material:
1. Mineral fiber or fiberglass batt insulation complying with ASTM C665.
2. Sized for friction fit within floor framing.

C. Performance:
1. Noise Reduction Coefficient (NRC): Minimum 0.70.
2. Fire performance: ASTM E84, Class A.

2.3 INTERIOR FOUNDATION WALL INSULATION

A. Rigid Insulation:
1. Type: Rigid mineral wool board or extruded polystyrene (XPS) complying with ASTM C578.
2. Thickness: 2 inches nominal.
3. Compressive strength: Minimum 15 psi.

B. Framed Wall Batt Insulation:
1. Type: Mineral wool batt insulation.
2. Thickness: Sized for nominal 2x4 framing.

2.4 SPRAY POLYURETHANE FOAM ROOF INSULATION

A. Manufacturers:
1. Demilec.
2. Carlisle Spray Foam Insulation.
3. BASF.
4. Or approved equal.

B. Material:
1. Medium-density closed-cell spray polyurethane foam.

C. Performance:
1. Minimum aged R-value: R-6.0 per inch.
2. Installed thickness: 8-1/2 inches nominal or thickness required to achieve R-49 minimum, whichever is greater.
3. Vapor retarder classification: Class II vapor retarder in accordance with ASTM E96/E96M.
4. Air permeance: Not more than 0.02 L/s·m² at 75 Pa.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify cavities are free of debris and excessive moisture prior to insulation installation.

B. Verify netting, substrates, and framing are in place to receive insulation.

3.2 INSTALLATION – GENERAL

A. Install insulation in accordance with manufacturer’s written instructions.

B. Maintain continuity of insulation at transitions between assemblies.

C. Do not compress insulation except where permitted by manufacturer.

3.3 INSTALLATION – DENSE-PACK CELLULOSE WALL INSULATION

A. Install cellulose insulation behind Insulweb netting and beneath smart vapor retarder membrane.

B. Install to achieve uniform density of 3.4 pcf minimum with no voids or settling.

C. Repair damaged netting prior to installation of vapor retarder.

3.4 INSTALLATION – ACOUSTIC BATT FLOOR INSULATION

A. Install batts in full contact with subfloor above and ceiling or sheathing below.

B. Cut neatly around penetrations; do not leave gaps or voids.

3.5 INSTALLATION – INTERIOR FOUNDATION WALL INSULATION

A. Install rigid insulation continuously against interior face of foundation walls.

B. Seal joints and perimeter to limit air movement behind insulation.

C. Construct new 2x4 wood stud wall immediately interior of rigid insulation.

D. Install mineral wool batt insulation within stud cavities.

3.6 INSTALLATION – SPRAY FOAM ROOF INSULATION

A. Pre-Installation Moisture Verification:
1. Verify roof framing members and roof sheathing have a moisture content of 15 percent or less prior to spray foam application.
2. Measure moisture content using a calibrated moisture meter.
3. Do not apply spray foam insulation until acceptable moisture content is confirmed.

B. Application:
1. Apply spray polyurethane foam directly to underside of roof sheathing.
2. Install in lifts per manufacturer’s recommendations.
3. Achieve continuous coverage and full adhesion.

C. Trimming:
1. Trim flush where required to accommodate interior finishes.

3.7 FIELD QUALITY CONTROL

A. Verify insulation installation supports continuity of the interior air and vapor control layers.

B. Coordinate insulation installation with smart vapor retarder membranes specified in Section 072600.

C. Coordinate with air leakage testing specified in Section 014517.

END OF SECTION

SECTION 072600
SMART VAPOR RETARDERS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior smart vapor retarder membranes for use in exterior wall and roof assemblies.
2. Accessories required for installation, seaming, and continuity of smart vapor retarder membranes.

B. Coordination:

1. Insulation materials and installation are specified in Section 072100 – Thermal Insulation.
2. Smart vapor retarder membranes specified in this Section are intended to function as part of the primary interior air and vapor control layer.
3. Air leakage performance verification is specified in Section 014517 – Field Testing of Exterior Assemblies.

C. Work under this Section is part of a historic rehabilitation of an existing wood-framed building. All work is performed from the interior side of the building.

1.2 REFERENCES

A. ASTM International:

1. ASTM E96/E96M – Standard Test Methods for Water Vapor Transmission of Materials.
2. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

B. ICC Evaluation Service:

1. ICC-ES Acceptance Criteria for Flexible Air Barrier Materials, as applicable.

1.3 DEFINITIONS

A. Smart Vapor Retarder: A polymeric membrane with variable vapor permeance that changes in response to ambient relative humidity, allowing assemblies to dry toward the interior when conditions permit while limiting vapor diffusion during cold-weather conditions.

1.4 SUBMITTALS

A. Product Data: Manufacturer’s technical data for each smart vapor retarder membrane and accessories.

B. Installation Instructions: Current manufacturer installation guidelines.

C. Samples: Minimum 12-inch square samples of membrane material.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer shall have documented experience installing flexible sheet membranes in wall assemblies similar to those specified.

B. Mockups:

1. Provide representative mockup of membrane installation at one exterior wall bay, including seams, penetrations, and transitions, when requested by Architect.

1.6 PROJECT CONDITIONS

A. Historic Fabric Protection:

1. Protect existing historic materials and finishes during installation.
2. Installation methods shall be reversible to the greatest extent practicable and shall not permanently damage historic framing or finishes.

B. Environmental Conditions:

1. Install membranes in accordance with manufacturer’s temperature and humidity requirements.

PART 2 – PRODUCTS

2.1 SMART VAPOR RETARDER MEMBRANES

A. Basis of Design Product:

1. CertainTeed MemBrain™ Smart Vapor Retarder.

B. Acceptable Manufacturers:

1. CertainTeed Corporation.
2. Pro Clima (Intello Plus or equivalent).
3. Siga (Majrex or equivalent).
4. Or approved equal meeting performance requirements.

C. Material Requirements:

1. Flexible polyamide or polymeric sheet membrane.
2. Capable of installation on interior side of insulated assemblies.

D. Performance Requirements:

1. Vapor permeance:
   a. Low-humidity condition: Not more than 1.0 perm (Class II vapor retarder).
   b. High-humidity condition: Minimum 10 perms.
2. Fire performance: ASTM E84, Class A.

2.2 ACCESSORIES

A. Tape: Manufacturer's recommended pressure-sensitive tapes for seaming and repairs.

B. Sealants: Manufacturer-approved sealants compatible with membrane and substrates.

C. Fasteners:

1. Mechanical fasteners as required for attachment.
2. Staples permitted where allowed by manufacturer and concealed by finish materials.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify substrates are clean, dry, and free of sharp projections.

B. Verify insulation and netting are properly installed prior to membrane installation.

3.2 INSTALLATION – GENERAL

A. Install smart vapor retarder membrane on the interior side of insulated assemblies.

B. Orient membrane in accordance with manufacturer's instructions.

C. Install membrane as continuous layer with sealed seams, penetrations, and terminations.

3.3 SEAMS AND JOINTS

A. Overlap membrane edges minimum 3 inches unless otherwise recommended by manufacturer.

B. Seal seams using manufacturer's approved tape.

C. Repair tears and punctures with membrane patches sealed on all sides.

3.4 PENETRATIONS AND TRANSITIONS

A. Seal membrane tightly around electrical boxes, plumbing, ducts, and other penetrations.

B. Coordinate transitions to adjacent air barrier components to maintain continuity of the air and vapor control layers.

3.5 FIELD QUALITY CONTROL

A. Visually inspect membrane installation for continuity and completeness.

B. Repair deficiencies prior to concealment by interior finishes.

C. Coordinate with whole-building air leakage testing specified in Section 014517.

END OF SECTION

SECTION 076200

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Sheet metal flashing and trim for the following applications:

a. Through-wall flashing.
b. Formed wall flashing and trim.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Section 061000 - ROUGH CARPENTRY for wood nailers, curbs, and blocking.
2. Section 072700 - AIR BARRIERS for perimeter terminations at air and vapor barrier assembly.
3. Section 079200 - JOINT SEALANTS for field-applied sheet metal flashing and trim sealants.

1.3 PERFORMANCE REQUIREMENTS

A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

B. Fabricate and install roof edge flashing and copings capable of resisting Wind Zone forces required by Code according to recommendations in FMG Loss Prevention Data Sheet 1-49.

C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F material surfaces.

D. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

E. Interface with Other Systems:

1. Do not proceed with installation of flashing and sheet metal until completion of curb and substrate construction, cants, blocking, reglets and other construction required to receive flashing.
2. Coordinate flashing with other Work for correct sequencing of items comprising entire membrane or system of roofing or waterproofing and rain drainage.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Show layouts of sheet metal flashing and trim, including plans and elevations. Distinguish between shop- and field-assembled work. Include the following:

1. Identify material, thickness, weight, and finish for each item and location in Project.
2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
3. Details for fastening, joining, supporting, and anchoring sheet metal flashing and trim, including fasteners, clips, cleats, and attachments to adjoining work.
4. Details of expansion-joint covers, including showing direction of expansion and contraction.

C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Sheet Metal Flashing: 12 inches long. Include fasteners, cleats, clips, closures, and other attachments.
2. Trim: 12 inches long. Include fasteners and other exposed accessories.
3. Accessories: Full-size Sample.

1.5 QUALITY ASSURANCE

A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1. Meet with the Owner, Architect and Owner’s insurer if applicable, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, unit skylights, and roof-mounted equipment.
2. Review methods and procedures related to sheet metal flashing and trim.
3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
4. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.7 COORDINATION

A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

PART 2 - PRODUCTS

2.1 SHEET METALS

A. Aluminum Sheet: ASTM B 209, Alloy 3003, 3004, 3105, or 5005. Thickness as specified in this Section. Temper suitable for forming and structural performance required, but not less than H14, finished as follows:

1. High-Performance Organic Finish (3-Coat Fluoropolymer): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard 3-coat, thermocured system consisting of specially formulated inhibitive primer, fluoropolymer color coat, and clear fluoropolymer topcoat, with both color coat and clear topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with AAMA 2605 and with coating and resin manufacturers' written instructions.

a. Color and Gloss: As selected by Architect from manufacturer's full range.

B. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, with No. 2D dull, cold-rolled finish. Thickness as specified in this Section.

2.2 UNDERLAYMENT MATERIALS

A. Felts: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

B. Slip Sheet: Rosin-sized paper, minimum 3 lb/100 sq. ft.

2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.

1. Exposed Fasteners: Heads matching color of sheet metal by means of plastic caps or factory-applied coating.
2. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed, with hex washer head.
3. Blind Fasteners: High-strength aluminum or stainless-steel rivets.

C. Solder for Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.

D. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.

E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

F. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

G. Isolation Coating: ASTM D 1187, cold-applied asphalt emulsion, VOC compliant, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

H. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.4 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated. Shop fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.

B. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.

C. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.

1. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength. Provide 2 in. min. end dams at terminations (riveted and sealed watertight).
2. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
3. Soldered Seams in Stainless Steel: Prefabricated inside and outside corners and 2 in. min. end dams at terminations (riveted and soldered watertight).

D. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.

E. Expansion Provisions: Where lapped or bayonet-type expansion provisions in the Work cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with elastomeric sealant concealed within joints.

F. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

G. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

1. Thickness: As recommended by SMACNA's "Architectural Sheet Metal Manual" for application but not less than thickness of metal being secured.

2.5 WALL SHEET METAL FABRICATIONS

A. Through-Wall Flashing, Typical: Fabricate continuous flashings in minimum 96-inch-long, but not exceeding 12 foot long, sections, under copings, at shelf angles, and where indicated. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings. Form with 2-inch-high end dams. Fabricate from the following material:

1. Stainless Steel: 0.016 inch (0.40 mm) thick.

2.6 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.

1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system. Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer installation instructions, and SMACNA “Architectural Sheet Metal Manual”. Anchor units work of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal

fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints and seams that will be permanently watertight and weatherproof.

1. Torch cutting of sheet metal flashing and trim is not permitted.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.

1. Coat side of stainless-steel sheet metal flashing and trim with isolation coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip-sheet or install a course of polyethylene underlayment.
3. Bed flanges in thick coat of asphalt roofing cement where required for waterproof performance.

C. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.

D. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and elastomeric sealant.

E. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

1. Space cleats not more than 12 inches apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.

F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with elastomeric sealant concealed within joints.

G. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.

1. Aluminum: Use aluminum or stainless steel fasteners.
2. Stainless Steel: Use stainless-steel fasteners.

H. Seal joints with elastomeric sealant as required for watertight construction.

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 - JOINT SEALANTS.

I. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pretin edges of sheets to be soldered to a width of 1-1/2 inches except where pretinned surface would show in finished Work.

1. Do not solder aluminum sheet.
2. Stainless-Steel Soldering: Pretin edges of uncoated sheets to be soldered using solder recommended for stainless steel and phosphoric acid flux. Promptly wash off acid flux residue from metal after soldering.
3. Do not use open-flame torches for soldering. Heat surfaces to receive solder and flow solder into joints. Fill joints completely. Completely remove flux and spatter from exposed surfaces.

J. Aluminum Flashing: Rivet or weld joints in uncoated aluminum where necessary for strength.

3.3 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

3.4 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 078410

PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Through-penetration firestop systems for penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 078440 - FIRE-RESISTIVE JOINT SYSTEMS for fire-resistive joint sealers.
2. Section 079200 - JOINT SEALANTS for standard joint sealers.
3. Division 21 - FIRE SUPPRESSION for cutting penetrations for fire-suppression piping and providing firestopping complying with requirements in this Section.
4. Division 22 - PLUMBING for cutting penetrations for plumbing piping and providing firestopping complying with requirements in this Section.
5. Division 23 - HEATING, VENTILATING AND AIR CONDITIONING for cutting penetrations for ductwork and HVAC piping and providing firestopping complying with requirements in this Section.
6. Division 25 - INTEGRATED AUTOMATION for cutting penetrations for cable and conduit and providing firestopping complying with requirements in this Section.
7. Division 26 - ELECTRICAL for cutting penetrations for cable and conduit and providing firestopping complying with requirements in this Section.
8. Division 27 - COMMUNICATIONS for cutting penetrations for cable and conduit and providing firestopping complying with requirements in this Section.
9. Division 28 - ELECTRONIC SAFETY AND SECURITY for cutting penetrations for cable and conduit and providing firestopping complying with requirements in this Section.

1.3 COORDINATION

A. Jobsite conditions of each through-penetration firestop system must meet all details of the UL-Classified System selected. If jobsite conditions do not match any UL-classified systems, contact firestop manufacturer for alternative systems or Engineer Judgment Drawings.

B. Coordinate work with other trades to assure that penetration-opening sizes are appropriate for penetrant locations.

C. Verify that the schedule is current at the time of construction, and that each referenced system is suitable for the intended application.

1.4 PERFORMANCE REQUIREMENTS

A. General: For penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.

B. Penetrations in Fire-Resistance-Rated Walls: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).

1. Fire-resistance-rated walls include fire walls, fire-barrier walls, smoke-barrier walls and fire partitions.
2. F-Rating: Not less than the fire-resistance rating of constructions penetrated.

C. Penetrations in Horizontal Assemblies: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).

1. Horizontal assemblies include floors, floor/ceiling assemblies and ceiling membranes of roof/ceiling assemblies.
2. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
3. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.

D. Penetrations in Smoke Barriers: Provide penetration firestopping with ratings determined per UL 1479.

1. L-Rating: Not exceeding 5.0 cfm/sq. ft. (0.025 cu. m/s per sq. m) of penetration opening at 0.30-inch wg (74.7 Pa) at both ambient and elevated temperatures.

E. Exposed Penetration Firestopping:

1. Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
2. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.

a. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems demonstrating no evidence of water leakage when tested according to UL 1479.
b. 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.

F. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For each through-penetration firestop system, show each type of construction condition penetrated, relationships to adjoining construction, and type of penetrating item. Include firestop design designation of qualified testing and inspecting agency that evidences 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 system configuration for construction and penetrating items.

C. Through-Penetration Firestop System Schedule: Indicate locations of each through-penetration firestop system, along with the following information:

1. Types of penetrating items.
2. Types of constructions penetrated, including fire-resistance ratings and, where applicable, thicknesses of construction penetrated.
3. Through-penetration firestop systems for each location identified by firestop design designation of qualified testing and inspecting agency.

D. Qualification Data: For Installer.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Either a firm that has been approved by FMG according to FMG 4991, "Approval of Firestop Contractors" or a firm experienced in installing through-penetration firestop systems similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction of a minimum of five projects with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements.

B. Installation Responsibility: Assign installation of through-penetration firestop systems and fire-resistive joint systems in Project to a single qualified installer.

C. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, through one source from a single manufacturer.

D. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in Part 1 "Performance Requirements" Article:

1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL or another agency performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction.
2. Through-penetration firestop systems are identical to those tested per testing standard referenced in "Part 1 Performance Requirements" Article. Provide rated systems complying with the following requirements:

a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed in the UL “Fire Resistance Directory.”

E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, lot number, shelf life if applicable, qualified testing and inspecting agency's classification marking applicable to Project, curing time, and mixing instructions for multicomponent materials.

B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by through-penetration firestop system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilate through-penetration firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

1.9 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.

C. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until each installation has been examined building inspector, if required by authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, through-penetration firestop systems that may be incorporated into the Work include, but are not limited to the following:

1. Hilti, Inc.
2. BioFireshield; RectorSeal Corporation.
3. Specified Technologies, Inc. (STI).
4. 3M; Fire Protection Products Division.

2.2 FIRESTOPPING MATERIALS

A. Low-Emitting Materials: Penetration firestopping sealants and sealant primers shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. VOC Content: Penetration firestopping sealants and sealant primers shall comply with the following limits for VOC content:

1. Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.
4. Methylene chloride and perchloroethylene may not be intentionally added to sealants.

C. Compatibility: Provide through-penetration firestop systems that are compatible with one another; with the substrates forming openings; and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.

D. Materials: Provide through-penetration firestop systems containing primary materials and fill materials which are part of the tested assemblies indicated in the approved Through-Penetration Firestop System Schedule submittal. Fill materials are those referred to in directories of referenced testing and inspecting agencies as "fill," "void," or "cavity" materials.

1. Available Products:

a. BioFireshield; RectorSeal Smoke and Acoustic Sealant.
b. Hilti; CP 606 Flexible Firestop Sealant.
c. Hilti; CP 653 BA Firestop Speed Sleeve.
d. Hilti; FS-ONE Intumescent Firestop Sealant.

E. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for firestop systems indicated.

F. Endothermic Mats: 3M Interam Endothermic Mats by 3M Fire Protection Products; located in rated walls behind cabinet unit heaters, fire extinguisher cabinets and electrical panels where there are space limitations to maintain the wall rating.

2.3 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 work. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean out openings immediately before installing through-penetration firestop systems to comply with firestop system manufacturer's written instructions and with the following requirements:

1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of through-penetration firestop systems.
2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration firestop systems. 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 system's seal with substrates.

3.3 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

A. General: Install through-penetration firestop systems to comply with Part 1 "Performance Requirements" Article and with firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

C. Install fill materials for firestop systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
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 FIELD QUALITY CONTROL

A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections and prepare test reports, as required by 2015 IBC 1705.17 and 1705.17.1. Independent inspecting agency shall comply with ASTM E 2174 requirements including those related to qualifications, conducting inspections, and preparing test reports

B. Where deficiencies are found, repair or replace through-penetration firestop systems so they comply with requirements.

C. Proceed with enclosing through-penetration firestop systems with other construction only after inspection reports are issued and firestop installations comply with requirements.

3.5 CLEANING AND PROTECTING

A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure that through-penetration firestop systems are without damage or deterioration at time of Substantial 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 systems complying with specified requirements.

END OF SECTION

SECTION 079200

JOINT SEALANTS

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Joint sealants and fillers.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Section 092110 - GYPSUM BOARD ASSEMBLIES for sealing perimeter joints of gypsum board partitions to reduce sound transmission.
2. Section 093000 - TILING for sealing of expansion, contraction, control, and isolation joints in tile surfaces.

1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

A. Product Data: For each product indicated.

B. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

C. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

D. Qualification Data: For Installer and qualified testing agency.

E. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.

F. Preconstruction Field Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on preconstruction testing specified in "Quality Assurance" Article.

G. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

H. Field Test Report Log: For each elastomeric sealant application.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

C. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

D. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Use manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.

a. Adhesion Testing: Use ASTM C 794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
b. Compatibility Testing: Use ASTM C 1087 to determine sealant compatibility when in contact with joint sealant backing and glazing and gasket materials.

2. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
3. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
4. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

E. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Conduct field tests for each application indicated below:

a. Each type of elastomeric sealant and joint substrate indicated.
b. Each type of nonelastomeric sealant and joint substrate indicated.

3. Notify Architect seven days in advance of dates and times when test joints will be erected.

a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193.

1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

4. Report whether sealant in joint connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
5. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.6 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this Article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. Low-Emitting Materials: Interior sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. VOC Content: Provide interior sealants and sealant primers that comply with the following limits for VOC content:

1. Architectural Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.
4. Methylene chloride and perchloroethylene may not be intentionally added to sealants.

D. Colors of Exposed Joint Sealants: Provide colors as selected by the Architect from manufacturer’s full range of standard and custom colors; maximum of five colors, three standard colors and two custom colors.

2.2 JOINT SEALANTS

A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

B. Stain-Test-Response Characteristics: Elastomeric sealants shall be nonstaining to porous substrates. Provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

C. Suitability for Contact with Food: Where elastomeric sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600 or ANSI/NSF Standard 51.

D. Exterior Silicone Sealant, Single-Component Neutral-Curing Type:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Dow Corning Corporation; 790.
b. GE Silicones; SilPruf LM SCS2700.
c. Pecora Corporation; 864.

d. Tremco Inc.; Spectrem 1.

2. Extent of Use: Exterior joints in vertical and soffit surfaces.

E. Exterior Urethane Sealant, Multicomponent Pourable (Self-Leveling) Type for Pedestrian Traffic: ASTM C 920, Type M, Grade P, Class 25, Use T, M, & O.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Meadows, W. R., Inc.; POURTHANE.
b. Pecora Corporation; Urexpan NR-200.
c. Sika; Sikaflex-2c SL.
d. Tremco Inc.; THC-901.

2. Extent of Use: Exterior joints in horizontal surfaces.

F. Interior Sanitary Silicone Sealant, Single-Component Mildew-Resistant, Acid-Curing (Acetoxy) Type: ASTM C 920, Type S, Grade NS, Class 25, Use NT, G, A, and O.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Bostik; Pure Silicone.
b. Dow Corning Corporation; 786 Mildew Resistant.
c. GE Silicones; Sanitary SCS1700.
d. Pecora; 898NST.
e. Sika; Sikasil GP.
f. Tremco; Tremsil 200.

2. Extent of Use: Interior sanitary joints at toilet rooms, kitchens, and other wet areas.

G. Interior Acrylic Latex Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Henkel Corp.; Loctite Polyseamseal Acrylic Caulk with Silicone.
b. Pecora Corporation; AC-20+.
c. Tremco Inc.; Tremflex 834.

2. Extent of Use: Interior non-moving joints.

2.3 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type B (bicellular material with a surface skin) or other type, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

1. Availavle Products: Armacell Canada Inc.; ITP Standard Backer Rod; or approved equal.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include concrete, masonry, unglazed surfaces of ceramic tile, and exterior insulation and finish systems.
3. Remove laitance and form-release agents from concrete.
4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following metal, glass, porcelain enamel, and glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that 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 SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

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

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

a. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.

a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

a. Whether sealants filled joint cavities and are free of voids.
b. Whether sealant dimensions and configurations comply with specified requirements.
c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

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

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants 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 sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

SECTION 080152
RESTORATION OF WOOD WINDOWS

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

a. Exterior wood window repair.
b. New wood windows.
c. Reglazing, exterior windows.
d. Exterior wood storm window repair
e. New storm windows.
f. Exterior window hardware repair, refinishing, and replacement.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

a. Section 062010 - EXTERIOR FINISH CARPENTRY RESTORATION for exterior wood trim replacement.
b. Section 099000 - PAINTING AND COATING for field-applied paints.

1.3 DEFINITIONS

A. Wood Window Component Terminology: As identified in AWI's "Architectural Woodwork Quality Standards." Wood window components for historic treatment work include the following classifications:

a. Frame Components: Head, jamb, and sill.
b. Sash Components: Stile and rails, parting bead, stop, and muntins.
c. Exterior Trim: Exterior casing, brick mould, and drip cap.
d. Interior Trim: Casing, stool, and apron.

B. Design Reference Sample: A Sample that represents Architect's prebid selection of work to be matched; it may be existing work or specially produced for Project.

C. Glazing: Includes glass, glazing points, glazing tapes, glazing sealants, and glazing compounds.

D. Window: Includes window frame, sash and glazing, unless otherwise indicated by the context.

1.4 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified restoration specialist to perform preconstruction testing on wood windows.

    a. Test treatment methods for effectiveness and compliance with specified requirements.
    b. Notify Architect seven days in advance of the dates and times when testing will be performed.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.

B. Shop Drawings: For new and repair and replacement of wood windows and components. Show location and extent of replacement work, with enlarged details of replacement parts indicating materials, profiles, joinery, reinforcing, method of splicing into or attaching to existing wood window, accessory items, and finishes. Include field-verified dimensions and the following:

    a. Templates and directions for installing hardware and anchorages.
    b. Component numbers and corresponding window locations in the building on annotated plans and elevations.
    c. Provisions for sealant joints as required for location.
    d. Locations and details for weatherstripping.

C. Samples for Verification: For the following items of size indicated below, finished as required for use in the Work:

    a. Replacement Members: 12 inches long for each replacement member; including parts of frame, sash, and exterior trim.

        i. Architect reserves the right to require additional Samples of replacement members that show fabrication techniques, materials, and finishes.

    b. Repaired and Refinished Wood Window Members: Prepare Samples using existing wood window members removed from site, repaired, and refinished.
    c. Hardware: Full-size units with factory-applied finishes.
    d. Weather Stripping: 12-inch long sections.

D. Qualification Data: For qualified restoration specialist.

E. Preconstruction Test Reports: For restoration of wood windows.

1.6 QUALITY ASSURANCE

A. Restoration Specialist Qualifications: Engage an experienced, wood window and trim restoration firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance.

    a. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that wood window and trim restorations are in progress. Supervisors shall not be changed during Project except for causes beyond the control of restoration specialist firm.

b. Restoration Worker Qualifications: Persons who are experienced and specialize in restoration work of types they will be performing.

B. Restoration Program: Prepare a written plan for restoration of wood windows; including each phase or process, protection of surrounding materials during operations, and control of spills during on-site repair and other processes. Describe, in detail, materials, methods, and equipment to be used for each phase of work. Show compliance with indicated methods and procedures related to historic treatment of wood windows specified in this and other Sections.

C. Mockups: Build mockups to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation. Prepare mockups so they are inconspicuous or reversible.

a. Locate mockups either on the building where directed by Architect or in locations that enable viewing under same conditions as the completed Work, as approved by Architect.
b. Wood Window Repair: Prepare one entire window unit to serve as mockup to demonstrate sample repairs of wood window members including frame, sash, glazing, and hardware.
c. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
d. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

D. AWI Quality Standard: Comply with applicable requirements in AWI's "Architectural Woodwork Quality Standards" for construction, finishes, grades of wood windows, and other requirements.

E. Preinstallation Conference: Conduct conference at Project site.

a. Review methods and procedures related to restoration of wood windows including, but not limited to, the following:

i. Construction Schedule: Verify availability of materials, personnel, equipment, and facilities needed to make progress and avoid delays.
ii. Materials, material application, sequencing, tolerances, and required clearances.
iii. Maintaining weathertight building enclosures during contract period.

1.7 PROJECT CONDITIONS

A. Weather Limitations: Proceed with restoration of wood windows only when existing and forecasted weather conditions are within the environmental limits set by each manufacturer's written instructions and specified requirements.

1.7 SEQUENCING AND SCHEDULING

A. Perform restoration of wood windows in the following sequence:

a. Stamp each window frame with permanent opening-identification number in inconspicuous location. Include stamping all window components, including sash weights, if removed.

b. Tag existing window sash with opening-identification numbers and remove for on-site or off-site shop repair. Indicate on tags the locations on window of these components such as top sash and bottom sash.
c. Allow installation of temporary protection, weathertight enclosures, and security at window openings according to Division 01 Sections.
d. Remove window, dismantle hardware, and tag hardware with window opening-identification numbers.
e. In the shop, stamp each sash unit with permanent opening-identification number in inconspicuous location and remove site-applied tags.
f. Sort units by condition, separating those that need extensive repair.
g. Clean surfaces.
h. General Wood-Repair Sequence:

i. Remove paint to bare wood according to Section 099000 COATING.
ii. Rack frames slightly; inject adhesive into mortise and tenon joints.
iii. If thicker than original glass is required, rout muntins to required rebate size.
iv. Repair wood by consolidation, member replacement, partial member replacement, and patching.
v. Sanding:

1. For exterior surfaces, prime, fill, sand again, and prime surfaces again for refinishing according to Section 099000 - PAINTING AND COATING.
2. For interior surfaces, sand only.

vi. Repair, refinish, and replace hardware if required. Reinstall essential operating hardware.
vii. Install glazing.
viii. Allow removal of temporary protection, weathertight enclosures, and security at window openings according to Division 01 Sections.
ix. Reinstall units.
x. Apply finish coats to exterior components according to Section 099000 - PAINTING AND COATING.
xi. Install remaining hardware and weather stripping.

PART 2 – PRODUCTS

2.1 REPLACEMENT WOOD MATERIALS

A. Wood: Clear fine-grained lumber; kiln dried to a moisture content of 6 to 12 percent at time of fabrication; free of visible finger joints, blue stain, knots, pitch pockets, and surface checks larger than 1/32 inch deep by 2 inches wide.

a. Species: Match species of each existing type of wood product, unless otherwise indicated.

2.2 WOOD REPAIR MATERIALS

A. Wood Consolidant: Ready-to-use product designed to penetrate, consolidate, and strengthen soft fibers of wood materials that have deteriorated due to weathering and decay and designed specifically to enhance the bond of wood-patching compound to existing wood.

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

i. Abatron, Inc.; LiquidWood.
ii. ConServ Epoxy LLC; Flexible Epoxy Consolidant 100.
iii. Wood Care Systems; ROTFIX.

B. Wood-Patching Compound: Two-part epoxy-resin wood-patching compound; knife-grade formulation as recommended by manufacturer for type of wood repair indicated, tooling time required for the detail of work, and site conditions. Compound shall be designed for filling voids in damaged wood materials that have deteriorated due to weathering and decay. Compound shall be capable of filling deep holes and spreading to feather edge.

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

i. Abatron, Inc.; LiquidWood with WoodEpox.
ii. Advanced Repair Technology, Inc.; Primatrate with Flex-Tec HV.
iii. ConServ Epoxy LLC; Flexible Epoxy Consolidant100 with Flexible Epoxy Patch 200.
iv. Polymeric Systems, Inc.; QuickWood.
v. West System Inc.; West System.
vi. Wood Care Systems; ROTFIX with SCULPWOOD.

2.3 GLAZING MATERIALS

A. Glass: Uncoated float-glass, ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.

a. Tempered Float Glass: ASTM C 1048; Type I (transparent flat glass); Quality-Q3; Kind FT.
b. Restoration Glass: To match existing.
c. Glass Thickness: To match existing.

B. Glazing Systems:

a. Single Glass Units: Primer as recommended by glazing material manufacturer, with oil-based glazing putty or glazing compound and glazing points.

C. Glazing Repair Materials, General: Provide materials and types of materials and miscellaneous items as required for making glazing repairs and reglazing old and historic windows with single glass (non-insulated) units.

D. Glazing Putty: Oil-based glazing putty.

a. Basis of Design: Sarco Multi-Glaze Type-M.

E. Glazing Nails (or Points): Metal to match came, as required.

2.4 WINDOW HARDWARE

A. General: Provide window hardware indicated.

B. Window Hardware: Provide new window hardware manufactured by one of the following:

a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

i. Ball and Ball.
ii. Blaine Window Hardware Inc.
iii. Bronze Craft Corporation (The).
iv. Custom Trades International, Inc.
v. Parrett Manufacturing, Inc.
vi. Phelps Company.
vii. Pullman Mfg. Corporation.

C. Material and Design: To match existing.

D. New Hardware:

a. Locks: Provide new window lock and keeper sash locks with 1-15/16” installation hole centers, color oil-rubbed bronze.
b. Sash Stays: Provide new window sash stays with 1-7/8” base, color oil-rubbed bronze.

E. Window Hardware Finishes: Comply with BHMAA156.18 for base material and finish requirements indicated by the following:

a. BHMA 613: Dark-oxidized satin bronze, oil rubbed, bronze base metal.

2.5 WEATHER STRIPPING

A. Weatherstripping: Provide new 3/16 inch polypropylene tube seal weatherstripping centered at underside of bottom rail of inner sash and centered at backside of the top (meeting) rail of inner sash. Provide new self-adhesive felt weatherstripping on outside of side rails, install on both sides of new tape balance hardware.

2.6 STORM WINDOWS

A. Existing Wood Storm Windows

a. Restore existing wood storm windows at locations indicated on window schedule.

B. Aluminum Framed Storm Windows

a. Install new aluminum framed storm windows at locations indicated on window schedule.
b. Basis of Design: Allied Window, Inc.; Historic One Lite, HOL-B, Eastern Style Casing.
c. Frame Members: Extruded aluminum with baked acrylic finish in color selected by Architect.
d. Glazing: Tempered glass.
e. Screen Cloth: Charcoal aluminum 18 x 16 mesh.

2.7 MISCELLANEOUS MATERIALS

A. Borate Preservative Treatment: Inorganic, borate-based solution, with disodium octaborate tetrahydrate as the primary ingredient; manufactured for preserving weathered and decayed wood from further damage by decay fungi and wood-boring insects; complying with AWPA P5; containing no boric acid.

a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

i. Abatron, Inc.
ii. Nisus Corporation.
iii. Wood Care Systems.

B. Cleaning Materials:

a. Detergent Solution: Solution prepared by mixing 2 cups of tetrasodium polyphosphate, 1/2 cup of laundry detergent that contains no ammonia, 5 quarts of 5 percent sodium hypochlorite bleach, and 15 quarts of warm water for each 5 gal. of solution required.
b. Mildewcide: Provide commercial proprietary mildewcide or a solution prepared by mixing 1/3 cup of household detergent that contains no ammonia, 1 quart of 5 percent sodium hypochlorite bleach, and 3 quarts of warm water.

C. Adhesives: Wood adhesives for exterior exposure, with minimum 15- to 45-minute cure at 70 deg F, in gunnable and liquid formulations as recommended by adhesive manufacturer for each type of repair.

D. Fasteners: Fasteners of same basic metal as fastened metal unless otherwise indicated. Use metals that are noncorrosive and compatible with each material joined.

a. Match existing fasteners in material and type of fastener unless otherwise indicated.
b. Use concealed fasteners for interconnecting wood components.
c. Use concealed fasteners for attaching items to other work unless exposed fasteners are unavoidable or the existing fastening method is decorative.
d. For exposed fasteners, use Phillips-type machine screws of head profile flush with metal surface unless otherwise indicated.
e. Finish exposed fasteners to match finish of metal fastened unless otherwise indicated.

E. Anchors, Clips, and Accessories: Fabricate anchors, clips, and window accessories of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel complying with requirements in ASTM B 633 for SC 3 (Severe) service condition.

2.8 WOOD WINDOW AND TRIM FINISHES

A. Unfinished Repaired and Replacement Windows and Trims: Provide exposed exterior and interior wood surfaces of replacement windows unfinished; smooth, filled, and suitably prepared for on-site priming and finishing.

PART 3 – EXECUTION

3.1 PREPARATION

A. Protect adjacent materials from damage by historic treatment of wood windows and trims.

B. Clean existing wood windows and trims of mildew, algae, moss, plant material, loose paint, grease, dirt, and other debris by scrubbing with bristle brush or sponge and detergent

solution. Scrub mildewed areas with mildewcide. After cleaning, rinse thoroughly with fresh water. Allow to dry before repairing or painting.

C. Condition replacement wood members and replacement windows and trims to prevailing conditions at installation areas before installing.

3.2 RESTORATION PROCEDURES, GENERAL

A. General: Have restoration of wood windows and trims directed and performed by a qualified restoration specialist. In restoring items, disturb them as minimally as possible and as follows:

a. Follow the restoration sequence in "Sequencing and Scheduling" Article.
b. Apply each product according to manufacturer's written instructions unless otherwise indicated.
c. Stabilize and repair wood windows and trims to reestablish structural integrity and weather resistance while maintaining the existing form of each item.
d. Stop the progress of deterioration by removing coatings and applying borate preservative treatment before repair.
e. Repair items in place where possible and retain as much original material as possible.
f. Replace or reproduce items where indicated or scheduled.
g. Make restoration of materials reversible whenever possible.
h. Install temporary protective measures to protect wood window and trim work that is indicated to be completed later.

B. Mechanical Abrasion: Where mechanical abrasion is needed for the work, use only the gentlest mechanical methods, such as scraping and natural-fiber bristle brushing, that will not abrade wood substrate, reducing clarity of detail. Do not use abrasive methods such as sanding, wire brushing, or power tools except as indicated as part of the historic treatment program and as approved by Architect.

C. Repair and Refinish Existing Hardware: Dismantle window hardware; repair and refinish it to match finish samples.

D. Repair Wood Windows and Trims: Match existing materials and features, retaining as much original material as possible to perform repairs.

a. Unless otherwise indicated, repair wood windows and trims by consolidating, patching, splicing, or otherwise reinforcing wood with new wood matching existing wood or with salvaged, sound, original wood.
b. Where indicated, repair wood windows and trims by limited replacement matching existing material.

E. Protection of Openings: Where sash or windows are indicated for removal, cover resultant openings with temporary enclosures so that openings are weathertight during repair period.

a. Do not damage existing window frames or surrounding construction when installing temporary window closures. Temporary closures shall not obstruct restoration work scheduled for wood frames.

F. Identify removed windows, sash, and members with numbering system corresponding to window locations to ensure reinstallation in same location. Key windows, sash, and members to Drawings showing location of each removed unit. Permanently stamp units in a location that will be concealed after reinstallation.

3.3 GLAZING

A. Remove cracked and damaged glass and glazing materials from openings and prepare surfaces for reglazing.

B. Install new glass and reinstall existing repaired glass with indicated glazing system.

C. Disposal of Removed Glass: Remove from Owner's property and legally dispose of it, unless indicated to be reinstalled.

3.4 WOOD WINDOW AND TRIM PATCH-TYPE REPAIR

A. General: Patch wood members that are damaged and exhibit depressions, holes, or similar voids, and that have limited rotted or decayed wood.
   a. Remove sash from windows before performing patch-type repairs at meeting or sliding surfaces unless otherwise indicated. Reglaze units prior to reinstallation.
   b. Verify that surfaces are sufficiently clean and free of paint residue prior to patching.
   c. Treat wood members with wood consolidant prior to application of patching compound. Coat wood surfaces by brushing, applying multiple coats until wood is saturated and refuses to absorb more. Allow treatment to harden before filling void with patching compound.

B. Apply borate preservative treatment to accessible surfaces either before applying wood consolidant or after removing rotted or decayed wood. Apply treatment liberally by brush to joints, edges, and ends; top, sides, and bottom.

C. Apply wood-patching compound to fill depressions, nicks, cracks, and other voids created by removed or missing wood.

   a. Prime patch area with application of wood consolidant or manufacturer's recommended primer.
   b. Mix only as much patching compound as can be applied according to manufacturer's written instructions.
   c. Apply patching compound in layers as recommended by manufacturer until the void is completely filled.
   d. Finish patch surface to match contour of adjacent wood member. Sand patching compound smooth and flush, matching contour of existing wood member.
   e. Clean spilled compound from adjacent materials immediately.

3.5 WOOD WINDOW MEMBER-REPLACEMENT REPAIR

A. General: Replace parts of or entire wood window members at locations indicated on Drawings.

   a. Remove sash from windows before performing member-replacement repairs unless otherwise indicated.
   b. Verify that surfaces are sufficiently clean and free of paint residue prior to repair.
   c. Remove broken, rotted, and decayed wood down to sound wood.
   d. Custom fabricate new wood to replace missing wood; either replace entire wood member or splice new wood part into existing member. Fabricate replacement members according to AWI Section 1000 WI Section 7 requirements for Premium Grade.
   e. Secure new wood using finger joints or multiple dowels with adhesive and nailing to ensure maximum structural integrity at each splice. Use only concealed fasteners. Fill nail holes and patch surface to match surrounding wood.

B. Apply borate preservative treatment to accessible surfaces after replacements are made. Apply treatment liberally by brush to joints, edges, and ends; top, sides, and bottom.

C. Repair remaining depressions, holes, or similar voids with patch-type repairs.

D. Clean spilled materials from adjacent surfaces immediately.

E. Glazing: Reglaze units prior to reinstallation.

F. Reinstall units removed for repair into original openings.

G. Weather Stripping: Replace nonfunctioning and install missing weather stripping to ensure full-perimeter and meeting rail weather stripping for each operable sash.

3.6 WOOD WINDOW UNIT REPLACEMENT

A. General: Replace all existing wood window units with new custom-fabricated units to match profiles indicated on Drawings.

B. Apply borate preservative treatment to accessible surfaces before finishing. Apply treatment liberally by brush to joints, edges, and ends; top, sides, and bottom.

C. Mill glazed members to accommodate glass thickness. Glaze units prior to installation.

D. Install units and other components as indicated on Drawings and according to manufacturer's written instructions.

E. Install units level, plumb, square, true to line, without distortion or impeding movement, anchored securely in place to structural support, and in proper relation to wall flashing, trim, and other adjacent construction.

F. Set sill members in bed of sealant for weathertight construction unless otherwise indicated.

G. Install window units with new anchors into existing openings.

3.7 ADJUSTMENT

A. Adjust existing and replacement operating sash, hardware, weather stripping, and accessories for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts.

3.8 CLEANING AND PROTECTION

A. Protect window and trim surfaces from contact with contaminating substances resulting from construction operations. Monitor window and trim surfaces adjacent to and below exterior concrete and masonry during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances contact window and trim surfaces, remove contaminants immediately according to glass manufacturer's written recommendations.

B. Clean exposed surfaces immediately after historic treatment of wood windows and trims. Avoid damage to coatings and finishes. Remove excess sealants, glazing and patching materials, dirt, and other substances.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION

SECTION 081113
HOLLOW METAL DOORS AND FRAMES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
1. Hollow metal doors.
2. Hollow metal frames.
3. Factory preparation for hardware, glazing, and electrified components.
4. Factory priming and field painting requirements.

B. Scope Clarification:
1. Door and frame sizes, types, locations, fire-resistance ratings, and swing are indicated on the Architectural Door Schedule and Drawings.

C. Project Context:
1. Work under this Section is part of a historic rehabilitation project.
2. New doors and frames shall be coordinated with existing construction and finishes.

1.2 REFERENCES

A. Steel Door Institute (SDI):
1. SDI A250.8 – Recommended Specifications for Standard Steel Doors and Frames.
2. SDI A250.4 – Test Procedure and Acceptance Criteria for Physical Endurance.

B. ASTM International:
1. ASTM A653 – Zinc-Coated (Galvanized) Steel Sheet.
2. ASTM A1008 – Cold-Rolled Steel Sheet.

C. NFPA:
1. NFPA 80 – Fire Doors and Other Opening Protectives.
2. NFPA 252 – Fire Tests of Door Assemblies.

D. Energy Code:
1. Applicable Vermont Commercial Energy Code (based on IECC).

1.3 DEFINITIONS

A. Heavy Duty Door: Door construction meeting SDI Level 1 requirements.

B. Seamless Door: Door faces continuously welded, ground, and finished smooth with no visible seams.

1.4 SUBMITTALS

A. Product Data: Manufacturer’s data for doors and frames.

B. Shop Drawings:
1. Door and frame elevations and profiles.

2. Fire-resistance ratings where applicable.
3. Thermal construction details for exterior doors.

C. Certifications:
1. Steel Door Institute certification for doors and frames.
2. Fire-rating listings from recognized testing agencies.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications:
1. Manufacturer regularly engaged in producing SDI-certified hollow metal doors and frames.

B. Regulatory Requirements:
1. Comply with applicable building codes, fire-resistance requirements, and energy-code provisions.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver wrapped and protected from damage.

B. Store under cover in a dry location; protect from moisture and corrosion.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Ceco Door.
2. Steelcraft.
3. Curries.
4. Mesker Door.
5. Or SDI-certified equal.

2.2 HOLLOW METAL DOORS – GENERAL

A. Fabrication:
1. Comply with SDI A250.8.
2. Provide Steel Door Institute certified doors.

B. Door Level:
1. Level 1 – Heavy Duty.

C. Thickness:
1. 1-3/4 inches nominal.

D. Face Sheets:
1. 18-gauge steel, minimum.

E. Construction:
1. Seamless, continuously welded faces.
2. Edges welded, ground, and dressed smooth.
3. No visible seams on exposed faces.

2.3 DOOR CORES

A. Non-Rated Doors:
1. Polystyrene core.

B. Fire-Rated Doors:
1. Mineral core as required to achieve listed rating.

2.4 FIRE-RESISTANCE RATINGS

A. Provide doors as scheduled:
1. Non-rated.
2. 45-minute fire-resistance rated.
3. 60-minute fire-resistance rated.

B. Fire-rated doors shall bear approved fire labels and comply with NFPA 80.

2.5 EXTERIOR HOLLOW METAL DOORS (THERMAL REQUIREMENTS)

A. Construction:
1. Provide thermally broken hollow metal doors and frames.

B. Core:
1. Insulated core suitable for exterior use and energy-code compliance.

C. Thermal Performance:
1. Door assembly U-factor shall comply with applicable Vermont Commercial Energy Code requirements.

D. Weather Performance:
1. Provide perimeter gasketing, sweeps, and thresholds specified in the Door Hardware Section.
2. Coordinate with Division 08 weatherstripping requirements.

2.6 HOLLOW METAL FRAMES

A. Fabrication:
1. Comply with SDI A250.8.

B. Material:
1. Cold-rolled steel for interior frames.
2. Galvanized steel for exterior frames.

C. Gauge:
1. 16-gauge minimum for all interior frames.

D. Fire Ratings:
1. Provide frames with ratings matching doors where required.

2.7 FINISHES – PREPARATION AND PRIMING

A. Factory Preparation:
1. Clean steel surfaces of oil, dirt, and contaminants.
2. Phosphate treat in accordance with manufacturer’s standard practice.

B. Factory Primer:
1. Apply rust-inhibitive shop primer suitable for field painting.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify openings are correctly sized and prepared.

B. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install doors and frames in accordance with:
1. SDI installation standards.
2. NFPA 80 for fire-rated assemblies.
3. Manufacturer's written instructions.

B. Set frames plumb, level, square, and securely anchored.

C. Install doors to swing freely without binding.

3.3 FIELD PAINTING

A. Surface Preparation:
1. Remove temporary coatings and repair minor surface defects.
2. Lightly sand primed surfaces and clean prior to painting.

B. Painting:
1. Paint doors and frames in accordance with Division 09 – Painting.
2. Apply finish coats recommended for steel substrates.
3. Provide smooth, uniform finish free of runs, sags, or defects.

3.4 FIELD QUALITY CONTROL

A. Inspect doors and frames for:
1. Proper alignment and operation.
2. Compliance with fire-rating and thermal requirements.
3. Acceptable finish quality.

B. Replace damaged or non-conforming work.

3.5 CLEANING AND PROTECTION

A. Clean exposed surfaces after installation.

B. Protect doors and frames from damage until Substantial Completion.

END OF SECTION

SECTION 081430
STILE AND RAIL WOOD DOORS

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

a. Stile and rail wood doors, for exterior and interior.
b. Factory finishing for wood doors.
c. Factory fitting stile and rail wood doors to frames and factory machining for hardware.
d. Louvers and glass lites for flush wood doors.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

a. Section 062010 - EXTERIOR FINISH CARPENTRY for non-rated wood door frames.
b. Section 064020 - INTERIOR ARCHITECTURAL WOODWORK for non-rated wood door frames.
c. Section 087100 - DOOR HARDWARE for hardware for wood doors.
d. Section 099000 - PAINTING AND COATING for field-finishing wood doors.

1.3 SUBMITTALS

A. Product Data: For each type of door.

a. Include details of construction and glazing.
b. Include factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data, including those for stiles, rails, panels, and moldings (sticking); and other pertinent data.

a. Indicate dimensions and locations of mortises and holes for hardware.
b. Indicate dimensions and locations of cutouts.
c. Indicate requirements for veneer matching.
d. Indicate doors to be factory finished and finish requirements.

C. Samples for Initial Selection: For factory-finished doors.

D. Samples for Verification: Corner sections of doors, approximately 8 by 10 inches, with door faces and edgings representing typical range of color and grain for each species of veneer and solid lumber required.

E. Product Certificates: Signed by door manufacturers.

F. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of stile and rail wood door through one source from a single manufacturer.

B. Quality Standard for Doors of Special Design and Construction: Comply with AWI's "Architectural Woodwork Quality Standards" unless more stringent requirements are specified.

C. Safety Glass: Provide products complying with testing requirements in 16 CFR 1201, for Category II materials, unless those of Category I are expressly indicated and permitted.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in opaque plastic bags.

C. Mark each door on top and bottom edge with opening number used on Shop Drawings.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install interior doors until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form, signed by manufacturer, Installer, and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship, and have warped (bow, cup, or twist) more than 1/4 inch in a 42-by- 84-inch section.

    a. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
    b. Warranty shall be in effect during the following period of time from date of Substantial Completion:

        i. Exterior Doors: Two years.
        ii. Interior Doors: Five years.

PART 2 – PRODUCTS

2.1 SUSTAINABLE DESIGN PERFORMANCE REQUIREMENTS

A. Low-Emitting Materials: Provide wood doors in compliance with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.2 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Simpson Door Company
b. VT Industries, Inc; Eggers Stile & Rail Doors
c. Approved equal.

2.3 STILE AND RAIL WOOD DOORS

A. General: Use only materials that comply with referenced quality standards unless more stringent requirements are specified.

a. Assemble exterior doors and sidelites, including components, with wet-use adhesives complying with ASTM D 5572 for finger joints and ASTM D 5751 for joints other than finger joints.
b. Assemble interior doors, frames, and sidelites, including components, with either dry-use or wet-use adhesives complying with ASTM D 5572 for finger joints and ASTM D 5751 for joints other than finger joints.

B. Construction, General:

a. Grade of Doors for Transparent Finish: Premium.
b. Wood Species and Cut for Transparent Finish:

i. Exterior Doors: Mahogany.
ii. Interior Doors: Match existing.

C. Panel Designs: Drawings indicate panel designs. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

D. Door Construction for Transparent Finish:

a. Stile and Rail Construction: Clear lumber; may be edge glued for width. Select lumber for similarity of grain and color, and arrange for optimum match between adjacent pieces.
b. Raised-Panel Construction: Clear lumber, edge glued for width. Select lumber for similarity of grain and color, and arrange for optimum match between adjacent pieces.

E. Exterior Doors:

a. Stile and Rail Widths: As indicated.
b. Molding Profile: As indicated.
c. Raised-Panel Thickness: As indicated.

d. Glass for Openings: Uncoated, clear, insulating-glass units made from 2 lites of 3.0-mm thick, fully tempered glass with 1/4-inch interspace complying with Section 088000 - GLAZING.

F. Interior Doors:

a. Stile and Rail Widths: As indicated.
b. Molding Profile: As indicated.
c. Raised-Panel Thickness: As indicated.
d. Glass for Openings: Uncoated, clear, fully tempered float glass, 5.0 mm thick complying with Section 088000 - GLAZING.

2.5 GLAZING SYSTEMS

A. Glazing: Provide factory installed glass products in accordance with requirements in Section 088000 - GLAZING.

B. Glazed Openings: Trim openings indicated for glazing with solid wood moldings, with one side removable.

2.6 FABRICATION

A. Fabricate stile and rail wood doors in sizes indicated for Project-site fitting.
B. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels, unless otherwise indicated:

a. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/2 inch from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 3/8 inch from bottom of door to top of threshold.
b. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.

C. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W Series standards, and hardware templates.

a. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.

D. Exterior Doors: Factory treat exterior doors after fabrication with water-repellent preservative to comply with WDMA I.S.4. Flash top of out swinging doors with manufacturer's standard metal flashing.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine doors and substrates, with Installer present, for suitable conditions where wood stile and rail doors and fire-rated wood doorframes will be installed.

a. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.
b. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install wood door frames level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.

    a. Countersink fasteners, fill surface flush, and sand smooth. Hardware: For installation, see Section 087100 – DOOR HARDWARE.

B. Install wood doors to comply with manufacturer's written instructions and with referenced quality standard, and as indicated.

C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

D. Field-Finished Doors: Refer to the following for finishing requirements:

    a. Section 099000 - PAINTING AND COATING.

3.3 ADJUSTING AND PROTECTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Protection: Provide temporary protection to ensure work being without damage or deterioration at time of final acceptance. Remove protections and reclean as necessary immediately before final acceptance.

C. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION

SECTION 081499
WOOD DOOR REPAIR AND REFURBISHMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Wood door repair work includes the following:

1. Repair and re-install existing wood doors that are stored on the site.
2. Replication of deteriorated or missing components.
3. Cleaning and replacement of deteriorated or missing operating hardware.
4. Cleaning and refinishing existing wood doors.
5. Installing new ADA compliant lever handle hardware.

1.02 REPAIRED DOOR PERFORMANCE

A. The work of this Section includes the restoration of existing wood doors to an acceptable level of structural soundness, operation, and visual appearance.

1.03 SUBMITTALS

A. Product Data: Manufacturer’s product literature for each product used.

B. Samples: Full size samples of each component profile required for each type of replicated door and frame component.

C. Door Repair Schedule: Schedule for each door to be repaired outlining in detail proposed repair work to be performed on each door, frame, and hardware.

D. Qualification data for firms and persons specified in Quality Assurance article to demonstrate their capabilities and experience. Include name of contact person and telephone number for the two submitted similar projects.

1.04 QUALITY ASSURANCE

A. Wood Door Standards: Architectural Woodwork Institute (AWI) and Woodwork Institute (WI) quality standards apply to the work of this Section. Except as otherwise indicated, provide Premium Grade work as defined. Where conflicts occur between these standards and this Section, the more stringent requirement governs.

B. Restoration Contractor Qualifications: All work shall be performed by skilled Restoration Contractor having not less than 5-years satisfactory experience in comparable wood door repair including work on at least two projects similar in scope and scale to this Project.

1. Only skilled journeymen carpenters who are thoroughly trained and experienced in wood door repair work and the skills required and completely familiar with the materials and methods specified shall be used for wood door repair work.

2. One skilled journeymen carpenter shall be present at all times during execution of the work and shall personally direct the wood door repair work.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Wood Door Components: Keep materials and fabricated items dry and protected from damage, soiling, and deterioration.

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

1.06 JOB CONDITIONS

A. Field Measurements: The Developer Design/Builder shall be responsible for field measuring all dimension for any required replacement parts, treatments or repairs.

B. Coordination: Coordinate work of this Section with work specified in other Sections to ensure proper completion of all work. Where required, doors and frames shall be stripped of all finishes before repair work commences.

C. Do not nail or fasten infill to door frame or trim. The Developer Design/Builder shall be responsible for providing temporary protection in openings where doors are removed, as required.

PART 2 – PRODUCTS

2.01 CONSOLIDATION MATERIALS

A. Liquid Epoxy Consolildant: Abatron "LiquidWood", Astro Chemical Company "Astro Special 1101 and 2958", Gougeon Brothers, Inc. "105 Epoxy Resin mixed with 205 Fast Hardner" or approved equal two-part epoxy consolidant.

B. Structural Adhesive Putty: Abatron, Inc. "WoodEpox", Conservation Services "Flexible Epoxy Patch 200", Astro Chemical Company "Astro Special 3388" or approved equal two-component epoxy paste for filling, patching and building-up damaged wood.

2.02 FUNGICIDE TREATMENT MATERIALS

A. Fungicide: PPG/Olympic Paints and Stain "Mildew Check" or approved equal de-ionized water-based mildewcide/algicide for cleaning and prevention of regrowth of mildew and algae.

2.03 REPAIR AND REPLACEMENT MATERIALS

A. Wood for Replacement Members: Preservative treated wood components of species, cut, grade to match existing door to be repaired and refurbished.

1. Wood shall bear the grade and trademark of the association under whose rules it is produced and a mark of mill identification.

2. Lumber and finished woodwork throughout shall be of sound stock thoroughly seasoned, kiln-dried to a moisture content not exceeding 12-percent.

3. Work shall be free from defects or blemishes that will show on surfaces exposed after the finish coat is applied. Any material which is in any way defective or fails to meet specifications for quality and grade, or is otherwise not in proper condition, will be rejected.

B. Wood Filler: Benjamin Moore "Benwood Paste Wood Filler (238)" or approved equal solvent-based, air-drying, past-type wood filler. Color to match color of wood being patched.

C. Adhesive: Aliphatic resin, non-staining, heat and water resistant, glue for repair.

2.04 OTHER MATERIALS

A. Water-Repellent Preservative: Thompson & Formby “Wood Protector-Clear Wood Preservative”, DAP, Inc. “Woodlife Classic Wood Preservative” or NWWDA tested and approved preservative and water-repellent formulation containing 3-iodo-2-propynyl butyl carbamate (IPBC) as its active ingredient.

B. All other materials required for work of this Section shall be selected by the Owner.

2.05 FINISHES

A. Existing Wood Doors: Site-finish by sanding, scraping or otherwise removing existing loose, damaged, or deteriorated finish where required. Refinish as specified in Section 09 91 00.

PART 3 – EXECUTION

3.01 GENERAL

A. The repair of wood doors shall be executed in accordance with the requirements of this Section.

3.02 EXAMINATION

A. Take necessary field measurements and verify existing conditions prior to ordering and fabrication of material.

B. Examine each door opening carefully to determine work required to repair and refinish wood doors. Determination of work is subject to approval of the Owner and Architect whose decision shall be final.

3.03 WOOD DOOR REPAIR SEQUENCE

A. Where required for repair, remove doors from frames.

B. Remove dirt and debris and extraneous nails, staples, bolts, hooks, etc. from doors and frames.

C. Label each member prior to disassembly for repair.

D. Proceed with required repair work.

E. Sand and refinish surfaces to a uniform and smooth finish. Refinish as specified in Section 09 91 00.

F. Reinstall doors in original locations.

G. Make final adjustments and assure that doors and hardware operate properly.

3.04 WOOD CONSOLIDATION

A. General:

1. Remove existing deteriorated, damaged, or loose trim, components, and sections of millwork as required to accommodate new work.

2. Replace existing members that are completely deteriorated.

3. Close existing open joints with approved adhesive.

B. Patching:

1. Mix, use and cure structural adhesive putty following manufacturer's directions.

2. Form exact, sharp and accurate profiles to match existing.

3. File and sand to match desired profile and to produce uniformly smooth surface. No coarse-grained sandpaper mark or other imperfections will be permitted.

C. Consolidation:

1. Mix, use and cure epoxy consolidants following manufacturer's directions.

2. Drill holes in areas of deteriorated wood as required for complete penetration of consolidant into deteriorated portions of member.

3. Flow consolidant onto wood with a brush until wood is saturated.

D. At completion of work, wood door and frame members shall match original in profile and shall be sound and true.

3.05 DOOR REPAIR

A. Strip paint and loose finishes from doors using approved stripping chemicals. Paint removal may take place off site. No dip stripping is permitted.

B. Inspect door components for condition. If repairs other than filler are required, carefully remove glass from door, disassemble door and remove deteriorated components and replace with replicated components.

C. Replace muntins, rails, and stiles that are missing or deteriorated.

D. Dutchman Repairs: Where practicable, repair deteriorated, split, or missing wood with Dutchman repairs following procedure described above.

1. For Dutchman repairs of stiles and rails, join Dutchman to existing wood using interlocking diagonal scarf joints and/or interlocking joints (such as open mortise and tenon joints) to increase the bonding surface of the joint and the structural strength of the completed assembly.

E. Tighten loose and open joints by disassembling door, and reassembling using waterproof glue and replacement hardwood pins. Clamp until glue sets.

F. Fill miscellaneous holes, cracks, and gouges with epoxy wood filler.

G. Sand to smooth surface.

H. Treat unpainted wood surfaces with wood preservative. Liberally apply two coats to all surfaces. Allow 24-hours between coats and 3-days prior to painting.

I. Reinstall existing sound glass, if removed, and install new glass to replace missing glass.

J. Reinstall removed existing hardware and install new to replace missing or broken pieces as required.

K. New finish is specified in Section 09 91 00.

3.06 INSTALLATION OF REPAIRED DOORS

A. Install repaired doors level and plumb, without warp or rack of frames or doors. Properly support, anchor, or secure components.

B. Adjust operating hardware to provide smooth operation. Lubricate hardware and moving parts.

C. Doors shall be in excellent operating condition at the conclusion of work.

3.07 CLEANING

A. Clean interior and exterior surfaces promptly after installation. Take care to avoid damage to protective coatings and finishes. Remove excess glazing and sealants, dirt, and other substances.

B. Clean glass promptly after installation of sashes. Wash and polish glass on both faces before Substantial Completion. Comply with manufacturer's recommendations for final cleaning and maintenance. Remove non-permanent labels from glass surfaces.

C. Remove and replace glass that has been broken, chipped, cracked, abraded or damaged during the construction period.

3.08 ADJUSTMENTS

A. Repair or replace defective work to the satisfaction of the Owner and Architect at no additional cost to the Owner.

B. Adjust doors and operating hardware to provide a tight fit at contact points and weatherstripping, and to provide smooth operation and a weathertight closure. Lubricate hardware and moving parts.

3.09 PROTECTION

A. Protect doors and frames from damage or deterioration until time of Substantial Completion.

END OF SECTION

SECTION 092110

GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Interior gypsum wallboard.
2. Tile backing panels.
3. Acoustic insulation (sound attenuation batts) in gypsum wallboard assemblies.
4. Non-load-bearing steel framing, including angles in partial-height partitions.
5. Installation of access panels.
6. Marking and identification for fire- and smoke-partitions.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:
1. Section 061000 - ROUGH CARPENTRY for plywood backing panels.
2. Section 061600 - SHEATHING for gypsum sheathing at exterior assemblies.
3. ~~Section 083110 - ACCESS DOORS AND FRAMES for furnishing access doors and frames in gypsum board assemblies.~~
4. Section 093000 - TILING for joint compound at cementitious tile backing panels.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide fire stop tracks capable of withstanding deflection within limits and under conditions indicated.

1. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure.
2. Provide metal framing engineered to meet code requirements, project requirements, required heights, and the following deflection criteria. For gypsum board assemblies without applied rigid finishes L/240; for gypsum board assemblies with applied rigid finishes such as tile, stone, wood paneling L/360. Lateral load 5 psf except at shafts. Lateral load at shafts shall be required based on analysis of equipment and systems using shafts.
3. Provide fire stop tracks capable of withstanding deflection within limits and under conditions indicated.

B. Marking and Identification for Fire- and Smoke-Partitions: Fire walls, fire barriers, fire partitions, smoke barriers, smoke partitions and other walls required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:

1. Be located in accessible concealed floor, floor-ceiling or attic spaces; and
2. Locate within 15 feet of end of each wall and repeat at intervals not exceeding 30 feet measured horizontally along the wall or partition; and
3. Include lettering not less than 3 inches in height with a minimum 3/8 inch stroke in contrasting color, incorporating the suggested wording: "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," or other wording.
4. Exception: Walls in Group R-2 occupancies that do not have a removable decorative ceiling allowing access to the concealed space.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: If materials and systems other than those specified and those indicated on the Drawings are proposed for use, submit shop drawings signed and sealed by a structural engineer licensed in the jurisdiction of the project certifying proposed systems meet code and project requirements. and specified deflection criteria.

C. Samples: Full-size Sample in 12-inch-long length for each trim accessory indicated.

1.5 QUALITY ASSURANCE

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: 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. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Install mockups for the following:

   a. Each level of gypsum board finish indicated for use in exposed locations.
   b. Each texture finish indicated.

2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
3. Simulate finished lighting conditions for review of mockups.
4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are 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.

PART 2 - PRODUCTS

2.1 NON-LOAD-BEARING STEEL FRAMING, GENERAL

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.
2. Protective Coating: Manufacturer's standard corrosion-resistant zinc coating, unless otherwise indicated.
3. Recycled Content: Use minimum recycled content of 25%.

2.2 STEEL FRAMING FOR FRAMED ASSEMBLIES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. California Expanded Metals Co. (CEMCO).
2. EB Metal U.S.
3. Marino\WARE.
4. Studco Building Systems.

B. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Metal Thickness: 0.0312 inch (20 gauge).

C. Cold-Rolled Channel Bridging: 0.0538-inch bare-steel thickness, with minimum 1/2-inch- wide flanges.

1. Depth: 1-1/2 inches.
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch-thick, galvanized steel.

D. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Minimum Base-Metal Thickness: 0.0312 inch (20 gauge).
2. Depth: 1-1/2 inches.

E. Resilient Furring Channels: 1/2-inch-deep, steel sheet members designed to reduce sound transmission. Strictly comply with manufacturer's installation instruction.

1. Basis-of-Design: ClarkDietrich RC Deluxe, asymmetrical configuration.

F. Resilient Sound Isolation Clips: Provide galvanized steel and resilient material sound-isolation clips, equal to the following:

1. Kinetics Noise Control Co.; IsoMax.
2. PAC International, Inc.; RSIC-1.
3. Pliteq, Inc.; GenieClip.
4. Studco Building Systems; Resilmount A237R.

G. Spring Isolation Hangers: Provide galvanized and coated spring hanger system, equal to the following:

1. Kinetics Noise Control Co.; ICW for wood framing, ICC for metal framing.
2. PAC International, Inc.; RSIC--SI-CRC Pro Series.

H. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches wall attachment flange of 7/8 inch, minimum bare-metal thickness of 0.0179 inch, and depth required to fit insulation thickness indicated.

I. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

2.3 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. CertainTeed Gypsum, Inc.
2. Georgia-Pacific (G-P) Gypsum.
3. National Gypsum Company.
4. United States Gypsum Company (USG).

B. Gypsum Wallboard: ASTM C 1396.

1. Available Products: USG; SHEETROCK EcoSmart Panels.
2. Thickness: 1/2 inch and 5/8 inch as indicated.
3. Long Edges: Tapered.
4. Building Product Disclosure and Optimization, Environmental Product Declarations (EPD): Type III EPD.
5. Low-Emitting Materials, General Emissions Evaluation: GreenGuard Gold certification.

C. Gypsum Wallboard, Fire-Resistant Type X: ASTM C 1396.

1. Available Products: USG; SHEETROCK EcoSmart Panels Firecode X.
2. Thickness: 5/8 inch.
3. Long Edges: Tapered.
4. Building Product Disclosure and Optimization, Environmental Product Declarations (EPD): Type III EPD.
5. Building Product Disclosure and Optimization, Material Ingredients: Health Product Declaration (HPD) or Declare product labels.

6. Low-Emitting Materials, General Emissions Evaluation: GreenGuard Gold certification.

D. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396. With moisture- and mold-resistant core and paper surfaces.

1. Core: 5/8 inch, Type X.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
4. Building Product Disclosure and Optimization, Environmental Product Declarations (EPD): Type III EPD.
5. Building Product Disclosure and Optimization, Material Ingredients: Declare product labels.
6. Low-Emitting Materials, General Emissions Evaluation: GreenGuard Gold certification.

2.4 TILE BACKING PANELS

A. Cementitious Tile Backing Units: ANSI A118.9 and ASTM C 1288 or 1325, with manufacturer's standard edges.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Custom Building Products; Wonderboard and Wonderboard Lite.
b. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
c. National Gypsum Company; Permabase Cement Board.
d. USG Corporation; DUROCK Cement Board.

2. Thickness: 5/8 inch.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Shapes:

a. Cornerbead.
b. Bullnose bead.
c. LC-Bead: J-shaped; exposed long flange receives joint compound.
d. Expansion (control) joint. For control joints in fire rated walls provide Cemco FAS 093X fire-rated control joint or equal.
e. Curved-Edge Cornerbead: With notched or flexible flanges.

B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Fry Reglet Corp.
b. Gordon, Inc.
c. Pittcon Industries.

2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221, Alloy 6063-T5.
3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.
2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
3. Fill Coat: For second coat, use setting-type, sandable topping compound.
4. Finish Coat: For third coat, use setting-type, sandable topping compound.
5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound.

D. Joint Compound for Tile Backing Panels:

1. Cementitious Backing Units: Thinset, nonsag mortar, as recommended by backing unit manufacturer. Refer to Section 093000 - TILING.
2. Water-Resistant Gypsum Backing Board: Use setting-type taping compound and setting-type, sandable topping compound.

2.7 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

1. Low-Emitting Materials: Provide adhesives in compliance with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
2. VOC Content: 50 g/L or less.
3. Methylene chloride and perchloroethylene may not be intentionally added to adhesives.
4. Do not use adhesives that contain urea formaldehyde.

C. 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 inch thick.
2. For fastening cementitious tile backing units, use screws of type and size recommended by panel manufacturer.

3. For fastening abuse-resistant gypsum panels, use Type S 'high-low' screws.
4. For fastening impact-resistant gypsum panels, use Type S 'high-low' screws.

D. Acoustic Insulation, Sound Attenuation (Batts) Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. CertainTeed Corporation; NoiseReducer.
    b. Johns Manville; Unfaced Formaldehyde-Free Fiber Glass Insulation.
    c. Knauf Insulation; EcoBatt.
    d. Owens Corning; EcoTouch SAB.
    e. Owens Corning; Thermafiber SAFB FF.
    f. Rockwool (formerly Roxul); AFB evo.

2. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
3. Building Product Disclosure and Optimization, Environmental Product Declarations (EPD).
4. Recycled Content: Use minimum recycled content of 25%.
5. Building Product Disclosure and Optimization, Material Ingredients: Health Product Declaration (HPD) or Declare product labels.
6. Low-Emitting Materials, General Emissions Evaluation: GreenGuard Gold certification.

E. Acoustical Sealant: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, joint sealant, recommended for sealing interior concealed joints to reduce airborne sound transmission.

1. Available Products, for Concealed and Exposed Joints: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Pecora Corp.; AC-20 FTR Acoustical and Insulation Sealant.
    b. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
    c. USG; SHEETROCK Acoustical Sealant.

2. Available Products, for Concealed Joints Only: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. OSI (a division of Henkel); Pro-Series SC-175.
    b. Pecora Corp.; BA-98.
    c. Tremco, Inc.; Tremco Acoustical/Curtainwall Sealant.

3. Low-Emitting Materials: Provide sealants in compliance with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
4. VOC Content, Architectural Sealants: 250 g/L or less.
5. Methylene chloride and perchloroethylene may not be intentionally added to sealants.

2.8 IDENTIFICATION LABELS FOR FIRE- AND SMOKE-PARTITIONS

A. Identification Labels: Self-adhesive signs, to comply with applicable local Code.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Fire Wall Signs, Inc.
b. Marking & Identification Tape (mnitape.com).
c. My Safety Sign.
d. Safety Supply Warehouse.

2. Text: "FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS".

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

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

3.3 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754. Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

C. Install bracing at terminations in assemblies.

D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING FRAMED ASSEMBLIES

A. Direct Furring: Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.

B. Z-Furring Members:

1. Erect insulation vertically and hold in place with Z-furring members spaced 24 inches o.c.
2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.

3.5 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless 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. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- 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.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

3.6 APPLYING INTERIOR GYPSUM BOARD

A. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels to minimize end joints.
3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

B. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

C. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

D. Curved Surfaces:

1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12-inch-long straight sections at ends of curves and tangent to them.
2. For double-layer construction, fasten base layer to studs with screws 16 inches o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches o.c.

3.7 APPLYING TILE BACKING PANELS

A. Cementitious Tile Backing Units: ANSI A108.1, at locations indicated to receive tile, with joints treated to comply with ANSI A108.11.

B. Water-Resistant Backing Board: Install at areas not subject to wetting and elsewhere as indicated with 1/4-inch gap where panels abut other construction or penetrations.

C. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.8 INSTALLING TRIM ACCESSORIES

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. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners, unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges.
3. Curved-Edge Cornerbead: Use at curved openings.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.9 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. Prefill 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: Comply with GA-214. Finish panels to levels indicated below:

1. Level 1: Ceiling plenum areas and concealed areas not exposed to view.
2. Level 2: Panels that are substrate for tile.
3. Level 3: Not Used.
4. Level 4: Panel surfaces that will be exposed to view (typical panels).
5. Level 5: Where indicated on Drawings; includes areas to receive dry erase coatings, wall graphics, and wallcoverings.

E. Cementitious Tile Backing Units: Finish according to manufacturer's written instructions.

3.10 INSTALLING IDENTIFICATION FOR FIRE- AND SMOKE-PARTITIONS

A. Marking and Identification for Fire- and Smoke-Partitions: Permanently install as required by Code.

3.11 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, or exhibit mold growth. Repair of damaged panels in place is not acceptable.

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.

END OF SECTION

SECTION 093000

TILING

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Floor, wall, and base tiles.
2. Setting materials and accessories.
3. Surface preparation.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

~~1. Section 033000 - CAST-IN-PLACE CONCRETE for monolithic slab finishes specified for tile substrates.~~
2. Section 079200 - JOINT SEALANTS for sealing of joints between dissimilar materials.
~~3. Section 083110 - ACCESS DOORS AND FRAMES for installation in tile.~~
4. Section 092110 - GYPSUM BOARD ASSEMBLIES for tile backer units.

1.3 DEFINITIONS

A. Module Size: Actual tile size plus joint width indicated.

B. Face Size: Actual tile size, excluding spacer lugs.

1.4 PERFORMANCE REQUIREMENTS

A. Wet Dynamic Coefficient of Friction: For flooring exposed as a walking surface, provide products with the following values as determined by testing identical products per ANSI/ NFSI B101.3 - 2012 Test Method for Measuring Wet DCOF of Common Hard-Surface Floor Materials, or ANSI 326.3 - American National Standard Test Method for Measuring Dynamic Coefficient of Friction of Hard Surface Materials - 2017. Testing by other methods or earlier editions of the specified test method is not acceptable.

1. Wet Dynamic Coefficient of Friction: Not less than 0.43.

1.5 SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

1. For feature spaces including lobbies, reception areas, corridors, food service areas and similar spaces provide layout drawings based on measured as-building conditions.

C. Samples for Verification:

1. Assembled samples with grouted joints for each type and composition of tile and for each color and finish required, at least 12 inches square and mounted on rigid panel. Use grout of type and in color or colors approved for completed work.
2. Full-size units of each type of trim and accessory for each color and finish required.
3. Stone Thresholds: 6-inch lengths.
4. Metal Edge Strips: 6-inch lengths.

D. Qualification Data: For Installer.

E. Material Test Reports: For each tile setting product.

1.6 QUALITY ASSURANCE

A. Source Limitations for Tile: Obtain tile of same type and color or finish from one source or producer.

1. Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting Materials: Obtain ingredients of a uniform quality for each membrane, mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer for each product:

1. Stone thresholds.
2. Metal edge strips.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Store liquid additives in unopened containers and protected from freezing.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.9 WARRANTY

A. Tiling Contractor’s Warranty: The tiling subcontractor shall supply Owner with a minimum two-year workmanship warranty for each tile area. In the event any work related to the tiling and setting materials is found to be defective within two years of substantial completion, the tiling contractor shall remove and replace such at no additional cost to the Owner. The tiling subcontractor’s warranty obligation shall run directly to the Owner, and a copy the tiling signed warranty shall be sent to the tiling system’s manufacturer.

1. The duration of the tiling subcontractor’s two-year warranty shall run concurrent with the tiling system’s manufacturer’s 25-year warranty.

B. Tiling Systems Manufacturer’s Warranty: The tiling systems manufacturer shall guarantee installed tile areas to be in a fully bonded, uncracked, flat, and watertight condition, for a period of 25 years, from the date of final acceptance of the tiling system. The warranty shall be a 25-year no dollar limit (NDL), non-prorated total system labor and material warranty. Total system warranty shall include tiling materials, related components and accessories including, but not limited to the substrate board, waterproofing and crack suppression membranes, mortars, grouts, adhesives, transition materials, and floor drain assemblies.

PART 2 - PRODUCTS

2.1 BASIS-OF-DESIGN

A. Basis-of-Design Products: Refer to the Finish Schedule on the Drawings.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide Standard-grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

1. For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.
2. Large Format Tiles are defined as more than 12 inches in any nominal dimension.
3. Building Product Disclosure and Optimization, Environmental Product Declarations (EPD): Type III EPD for ceramic tiles.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

2.3 TILE PRODUCTS

A. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

B. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer, unless otherwise indicated.

C. Tile Trim Units: Matching characteristics of adjoining flat tile and coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes selected from manufacturer's standard shapes.

2.4 THRESHOLDS AND EDGE STRIPS

A. Thresholds: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.

B. Marble Thresholds: ASTM C 503/C 503M, with a minimum abrasion resistance of 10 according to ASTM C 1353 or ASTM C 241/C 241M and with honed finish.

1. Description: Uniform, fine- to medium-grained white stone with gray veining.

C. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and resilient base, designed specifically for flooring applications.

1. Basis of Design: Schluter Systems.
2. Material: ASTM B 221, extruded aluminum, with clear anodized satin finish.

2.5 SETTING MATERIALS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Custom Building Products.
2. Laticrete International, Inc.
3. MAPEI Corporation.

B. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

1. Basis of Design: MAPEI; Mapecem Quickpatch.

C. Waterproof Membrane: Manufacturer's standard product, that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

D. Fabric-Reinforced, Fluid-Applied Waterproofing and Crack Suppression Membrane: System consisting of liquid-latex rubber or elastomeric polymer and continuous fabric reinforcement.

1. Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Custom Building Products; 9240 Waterproofing and Anti-Fracture Membrane.

b. Laticrete; Hydro Ban.
c. MAPEI; Mapelastic AquaDefense.

2. Building Product Disclosure and Optimization, Material Ingredients: Health Product Declaration (HPD) or Declare product labels.
3. Low-Emitting Materials, General Emissions Evaluation: Provide membranes in compliance with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

a. VOC Content, Waterproofing Sealer: 100 g/L or less.
b. GreenGuard Gold certification.

E. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.

1. Cleavage Membrane: Asphalt felt, ASTM D 226, Type I (No. 15); or polyethylene sheeting, ASTM D 4397, 4.0 mils thick.
2. Building Product Disclosure and Optimization, Environmental Product Declarations (EPD): Type III EPD for mortar.

F. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.

1. Provide prepackaged, dry-mortar mix combined with liquid-latex additive at Project site.
2. For wall applications, provide nonsagging mortar.

a. For glass tile wall applications, provide white color mortar.

3. Building Product Disclosure and Optimization, Environmental Product Declarations (EPD): Type III EPD for mortar.

G. Tile Grout, Cementitious Type: ANSI A118.7, liquid-latex form for addition to prepackaged dry-grout mix.

1. Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Custom Building Products; Polyblend.
b. Laticrete; Permacolor Select.
c. MAPEI; Keracolor.

2. Cementitious Grout Types:

a. Unsanded grout mixture for joints 1/8 inch and narrower.
b. Sanded grout mixture for joints 1/8 inch and wider.

3. Color: To be selected by Architect from manufacturer’s full range.
4. Building Product Disclosure and Optimization, Environmental Product Declarations (EPD): Type III EPD for grout.
5. Building Product Disclosure and Optimization, Material Ingredients: Health Product Declaration (HPD) or Declare product labels.
6. Low-Emitting Materials, General Emissions Evaluation: Provide membranes in compliance with the requirements of the California Department of Public Health's

"Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

a. VOC Content, Ceramic Tile Adhesives: 65 g/L or less.
b. GreenGuard Gold certification.

H. Tile Grout, Epoxy Type: ANSI A118.3, chemical resistant, water cleanable, tile grouting epoxy.

1. Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Custom Building Products; CEG-IG.
b. Laticrete; SpectraLock Pro.
c. MAPEI; Kerapoxy.

2. Color: To be selected by Architect from manufacturer’s full range.
3. Building Product Disclosure and Optimization, Material Ingredients: Health Product Declaration (HPD) or Declare product labels.
4. Low-Emitting Materials, General Emissions Evaluation: Provide membranes in compliance with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

a. VOC Content, Ceramic Tile Adhesives: 65 g/L or less.
b. GreenGuard Gold certification.

I. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

J. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints that does not change color or appearance of grout.

2.6 ELASTOMERIC SEALANTS

A. Joint Sealants: Refer to Section 079200 - JOINT SEALANTS.

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

2.7 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.

B. Provide concrete substrates for tile floors that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.

1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
2. Remove protrusions, bumps, and ridges by sanding or grinding.

C. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.

D. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 TILING INSTALLATION, GENERAL

A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

B. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.

F. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

G. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 - JOINT SEALANTS.

H. Stone Thresholds: Install stone thresholds at locations indicated; set in same type of setting bed as abutting field tile, unless otherwise indicated.

1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in mortar (thinset).
2. Do not extend membranes under thresholds set in mortar. Fill joints between such thresholds and adjoining tile set on membrane with elastomeric sealant.

I. Metal Edge Strips: Install at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.

J. Floor Sealer: Apply floor sealer to grout joints according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 MEMBRANE INSTALLATION

A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness bonded securely to substrate.

B. Install crack-suppression membrane to comply ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness bonded securely to substrate.

C. Do not install tile over membrane until membrane has cured and been tested to determine that it is watertight.

3.5 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

   a. Remove grout residue from tile as soon as possible.
   b. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
   c. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed. After seven days, cover areas subject to construction traffic with heavy cardboard

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION

SECTION 096400
WOOD FLOORING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
1. Solid wood strip and plank flooring.
2. Accessories required for installation, fastening, and finishing.

B. Project Context:
1. Work under this Section is part of a historic rehabilitation project of an existing wood-framed building.
2. Flooring installation shall respect irregularities typical of historic construction and shall not require removal of existing plank subflooring except where damaged.

C. Substrate:
1. Existing 2×6 wood plank subfloor.

1.2 REFERENCES

A. National Wood Flooring Association (NWFA):
1. NWFA Wood Flooring Installation Guidelines, current edition.

B. ASTM International:
1. ASTM D4442 – Measurement of Moisture Content in Wood.
2. ASTM E84 – Surface Burning Characteristics of Building Materials.

1.3 DEFINITIONS

A. Wide-Plank Flooring: Solid wood flooring with a face width of 10 inches or greater.

B. Historic Rehabilitation: Repair, alteration, and upgrade of an existing historic building while retaining historic materials, proportions, and character to the greatest extent practicable.

1.4 SUBMITTALS

A. Product Data:
1. Species, grade, thickness, width range, and milling details.

B. Samples:
1. Minimum 24-inch-long sample showing species, width, surface texture, and nail appearance.

C. Source Documentation:
1. Identification of local or regional source of Eastern White Pine lumber.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer shall have a minimum of 3 years documented experience installing wide-plank solid wood flooring.

B. Pre-Installation Conference:
1. Conduct a conference at the Project site to review substrate conditions, acclimation requirements, fastening methods, face-nailing layout, and finishing sequencing.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver flooring in unopened bundles, clearly labeled.

B. Store flooring in a dry, conditioned interior space.

C. Protect flooring from moisture, direct sunlight, and construction damage.

1.7 PROJECT CONDITIONS

A. Environmental Conditions:
1. Maintain interior temperature between 60°F and 80°F.
2. Maintain relative humidity between 30 and 55 percent before, during, and after installation.

B. Acclimation:
1. Acclimate flooring in the installation area for a minimum of 7 days prior to installation.

PART 2 – PRODUCTS

2.1 WOOD FLOORING

A. Species:
1. Eastern White Pine (Pinus strobus).

B. Source:
1. Locally or regionally sourced lumber appropriate for historic applications.

C. Form:
1. Solid wood, tongue-and-groove planks.

D. Dimensions:
1. Face width: 10 inches minimum.
2. Thickness: 3/4 inch nominal.
3. Lengths: Random lengths, minimum 6 feet unless otherwise approved.

E. Grade:
1. Select grade

F. Surface:
1. Smooth or lightly textured as selected by Architect.
2. Square edges unless otherwise indicated.

2.2 ACCESSORIES

A. Fasteners – General:

1. Fasteners shall be suitable for wide-plank solid wood flooring installed over plank subflooring.

B. Face-Nailing Fasteners:
1. Type:
a. Cut flooring nails (square-cut steel), or
b. Hand-forged–style or antique-finish flooring nails, subject to approval.
2. Size:
a. Length sufficient to fully penetrate flooring and achieve secure embedment into existing plank subfloor.
3. Finish:
a. Blackened steel, darkened steel, or antique finish appropriate for historic rehabilitation.

C. Blind-Nailing Fasteners:
1. Flooring cleats or nails recommended for solid wood flooring where blind nailing is used.

D. Slip Sheet:
1. Non-asphaltic rosin paper or equivalent to reduce squeaks and allow minor movement.

2.3 FLOOR FINISH MATERIALS

A. Finish System:
1. Water-based polyurethane floor finish.

B. Basis-of-Design Product:
1. Vermont Natural Coatings PolyWhey® Floor Finish – Satin.

C. Performance Requirements:
1. Low-VOC formulation suitable for residential historic interiors.
2. Compatible with Eastern White Pine flooring.
3. Satin sheen level.

D. Substitutions:
1. No substitutions permitted without Architect’s written approval.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify existing plank subfloor is:
1. Structurally sound.
2. Securely fastened.
3. Clean, dry, and free of protruding fasteners.

B. Repair or replace damaged subfloor boards prior to flooring installation.

3.2 PREPARATION

A. Refasten existing plank subfloor as required to reduce movement and squeaks.

B. Sand or plane high spots as necessary to provide a reasonably flat surface.

C. Install rosin paper or slip sheet if recommended by installer.

3.3 INSTALLATION

A. Install flooring in accordance with NWFA Installation Guidelines and manufacturer recommendations.

B. Layout:
1. Plan layout to minimize narrow end planks and maintain visual balance.
2. Allow for expansion at all walls and fixed obstructions.

C. Fastening – General:
1. Fasten flooring directly to existing 2×6 plank subfloor.
2. Combine blind nailing and face nailing as required to control movement of wide planks.

D. Face Nailing:
1. Visible face nailing is required and is an intentional part of the historic character of the flooring installation.
2. Install face nails in consistent, straight lines parallel to plank edges.
3. Space face nails evenly and appropriately for plank width to limit cupping and movement.
4. Light countersinking permitted; do not fill nail heads unless otherwise directed by Architect.

3.4 TOLERANCES

A. Install flooring flat, with joints tight and aligned.

B. Minor variations consistent with wide-plank Eastern White Pine and historic construction are acceptable.

3.5 FLOOR FINISHING

A. Surface Preparation:
1. Sand flooring uniformly to remove milling marks and minor irregularities.
2. Remove dust completely prior to finish application.

B. Finish Application:
1. Apply Vermont Natural Coatings PolyWhey® Floor Finish – Satin strictly in accordance with manufacturer’s written instructions.
2. Apply recommended number of coats to achieve uniform appearance and durability.
3. Lightly abrade between coats as recommended.

C. Environmental Conditions:
1. Maintain temperature and humidity within manufacturer’s recommended limits during finishing and curing.

D. Protection:
1. Protect finished flooring from foot traffic and construction activities until fully cured.

3.6 CLEANING AND PROTECTION

A. Remove debris and clean flooring upon completion of installation and finishing.

B. Protect flooring from damage by subsequent construction activities.

3.7 FIELD QUALITY CONTROL

A. Inspect flooring installation for:
1. Proper fastening and nail alignment.
2. Consistent plank spacing and layout.
3. Absence of excessive movement, cupping, or squeaks.

B. Correct deficiencies prior to Owner occupancy.

END OF SECTION

SECTION 096513
RUBBER STAIR TREADS AND RISERS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
1. Rubber stair treads.
2. Rubber stair risers.
3. Integral rubber nosings.
4. Accessories required for installation.

B. Project Context:
1. Work under this Section is part of a historic rehabilitation project of an existing wood-framed building.
2. Rubber treads and risers are installed on new stair construction.

C. Substrate:
1. 1-inch plywood stair substrate over wood framing.

D. Related Sections:
1. Section 061000 – Rough Carpentry (for stair framing and plywood substrates).
2. Section 096400 – Wood Flooring (for coordination where stairs abut wood flooring).

1.2 REFERENCES

A. ASTM International:
1. ASTM F386 – Standard Specification for Resilient Stair Treads.
2. ASTM F609 – Test Method for Measuring the Static Coefficient of Friction of Resilient Floor Coverings.
3. ASTM E84 – Surface Burning Characteristics of Building Materials.

B. ADA Standards for Accessible Design.

1.3 DEFINITIONS

A. Tread: Horizontal walking surface of stair.

B. Riser: Vertical face between adjacent treads.

C. Nosing: Leading edge of tread projecting beyond riser.

1.4 SUBMITTALS

A. Product Data:
1. Manufacturer’s technical data for rubber treads, risers, nosings, and adhesives.
2. Fire-performance and slip-resistance data.

B. Samples:
1. Full-size rubber tread and riser samples showing color, texture, and nosing profile.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:
1. Installer shall have a minimum of 3 years documented experience installing rubber stair treads and risers.

B. Regulatory Requirements:
1. Comply with applicable building codes and accessibility requirements for stair geometry and slip resistance.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer’s original, unopened packaging.

B. Store materials flat in a clean, dry, conditioned interior space.

C. Protect materials from deformation, moisture, dirt, and damage.

1.7 PROJECT CONDITIONS

A. Environmental Conditions:
1. Maintain temperature and humidity within manufacturer’s recommended limits before, during, and after installation.

B. Substrate Conditions:
1. Substrates shall be dry, smooth, clean, and structurally sound.

PART 2 – PRODUCTS

2.1 RUBBER TREADS AND RISERS

A. Manufacturers:
1. Nora by Interface.
2. Roppe Corporation.
3. Johnsonite (Tarkett).
4. Or approved equal.

B. Material:
1. Homogeneous rubber stair treads and risers complying with ASTM F386.

C. Configuration:
1. Treads with integral rubber nosing.
2. Rubber risers to match treads for durability and appearance.

D. Dimensions:
1. Tread depth and riser height as required to suit stair construction and code requirements.
2. Nosing profile and projection as required for code compliance.

E. Performance:
1. Slip resistance: Provide slip-resistant walking surface suitable for stair use.
2. Fire performance: ASTM E84, Class A.

F. Color and Texture:
1. Architect to select from manufacturer's full range.
2. Color to be subdued and appropriate for historic interior context.
3. Treads, risers, and nosings to be same color.

2.2 ACCESSORIES

A. Adhesives:
1. Manufacturer-recommended adhesives suitable for rubber stair products and plywood substrates.

B. Primers and Patching Compounds:
1. As recommended by tread manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify plywood stair substrate is:
1. Minimum 1 inch thick.
2. Securely fastened to framing.
3. Smooth, flat, and free of contaminants.

B. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Clean substrates of dust, dirt, oil, and debris.

B. Fill voids, seams, and irregularities to provide smooth, continuous surfaces.

C. Prime substrates where required by manufacturer.

3.3 INSTALLATION

A. Install rubber treads, risers, and nosings in strict accordance with manufacturer's written instructions.

B. Install risers plumb and tight to substrate.

C. Install treads level, with nosings straight, true, and securely bonded.

D. Provide tight joints with no lifting edges, gaps, or loose corners.

3.4 FIELD QUALITY CONTROL

A. Inspect installation for:
1. Secure adhesion.
2. Proper alignment and uniform appearance.
3. Absence of trip hazards or loose edges.

B. Correct deficiencies prior to Owner occupancy.

3.5 CLEANING AND PROTECTION

A. Clean installed rubber treads and risers in accordance with manufacturer's recommendations.

B. Protect from damage by subsequent construction activities.

END OF SECTION

SECTION 096519
RUBBER FLOORING AT STAIR LANDINGS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
1. Rubber sheet flooring at stair landings serving stairs with rubber treads and risers.
2. Accessories required for installation.

B. Project Context:
1. Work under this Section is part of a historic rehabilitation project of an existing wood-framed building.
2. Flooring is installed at new stair landings associated with stairs finished with rubber treads and risers.

C. Design Intent:
1. Stair landing flooring shall visually and materially coordinate with adjacent rubber stair treads and risers.
2. Flooring shall be selected from the same manufacturer and same product family as the rubber stair tread and riser system.

D. Related Sections:
1. Section 09 65 13 – Rubber Treads and Risers.
2. Section 06 10 00 – Rough Carpentry (for plywood substrates).

1.2 REFERENCES

A. ASTM International:
1. ASTM F2034 – Standard Specification for Rubber Sheet Floor Covering.
2. ASTM F609 – Test Method for Measuring the Static Coefficient of Friction of Resilient Floor Coverings.
3. ASTM E84 – Surface Burning Characteristics of Building Materials.

B. ADA Standards for Accessible Design.

1.3 DEFINITIONS

A. Stair Landing: Horizontal walking surface at top, bottom, or intermediate point of a stair.

1.4 SUBMITTALS

A. Product Data:
1. Manufacturer’s technical data for rubber sheet flooring, adhesives, and accessories.
2. Fire-performance and slip-resistance data.

B. Samples:
1. Minimum 12-inch square sample of selected rubber flooring.
2. Sample shall demonstrate color and texture coordination with rubber stair treads and risers.

C. Coordination Submittal:
1. Identification of stair treads, risers, and landing flooring products demonstrating they are from the same manufacturer and product family.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:
1. Installer shall have a minimum of 3 years documented experience installing rubber flooring.

B. Regulatory Requirements:
1. Comply with applicable building codes and accessibility requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer’s original, unopened packaging.

B. Store materials flat in a clean, dry, conditioned interior space.

C. Protect materials from deformation, moisture, dirt, and damage.

1.7 PROJECT CONDITIONS

A. Environmental Conditions:
1. Maintain temperature and humidity within manufacturer’s recommended limits before, during, and after installation.

B. Substrate Conditions:
1. Substrates shall be dry, clean, smooth, and structurally sound.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Basis-of-Design and Acceptable Manufacturers:
1. Nora by Interface.
2. Roppe Corporation.
3. Johnsonite (Tarkett).
4. Or approved equal.

B. Product Family Requirement:
1. Rubber stair landing flooring shall be selected from the same manufacturer and same product family as the rubber stair treads and risers specified in Section 09 65 13.
2. Mixing of manufacturers or unrelated product lines is not permitted.

2.2 RUBBER FLOORING

A. Material:
1. Homogeneous rubber sheet flooring complying with ASTM F2034.

B. Thickness:
1. Manufacturer’s standard thickness suitable for commercial stair landing use.

C. Performance:
1. Slip resistance: Provide slip-resistant walking surface appropriate for stair landings.
2. Fire performance: ASTM E84, Class A.

2.3 COLOR AND FINISH

A. Color and Texture:
1. Architect to select from manufacturer's full range.
2. Color shall be subdued and appropriate for historic interior context.
3. Flooring color and texture shall coordinate with adjacent rubber stair treads and risers.

2.4 ACCESSORIES

A. Adhesives:
1. Manufacturer-recommended adhesives compatible with rubber flooring and plywood substrates.

B. Primers and Patching Compounds:
1. As recommended by flooring manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify stair landing substrates are:
1. Smooth, flat, and structurally sound.
2. Free of contaminants and excessive moisture.

B. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Prepare substrates in accordance with flooring manufacturer's requirements.

B. Fill voids, seams, and irregularities to provide smooth, continuous surfaces.

C. Prime substrates where required by manufacturer.

3.3 INSTALLATION

A. Install rubber flooring in strict accordance with manufacturer's written instructions.

B. Install flooring flat, securely bonded, and free of bubbles or lifting edges.

C. Provide tight seams and clean transitions to adjacent rubber stair treads.

3.4 FIELD QUALITY CONTROL

A. Inspect installation for:
1. Secure adhesion.
2. Proper alignment and uniform appearance.
3. Absence of trip hazards or loose edges.

B. Correct deficiencies prior to Owner occupancy.

3.5 CLEANING AND PROTECTION

A. Clean installed rubber flooring in accordance with manufacturer's recommendations.

B. Protect flooring from damage by subsequent construction activities.

END OF SECTION

SECTION 096813
CARPET TILE

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
1. Modular carpet tile flooring, 24 inches by 24 inches.
2. Manufacturer-recommended modular adhesive system.
3. Substrate preparation and patching required for complete installation.

B. Project Context:
1. Work under this Section is part of a historic rehabilitation project.
2. Carpet tile is installed in a small public library subject to higher traffic, including reading rooms, study areas, stack areas, and a small conference room.

C. Substrate:
1. New 1/4-inch plywood underlayment installed over existing 2×6 plank subfloor (by others).

1.2 REFERENCES

A. ASTM International:
1. ASTM D2859 – Ignition Characteristics of Finished Textile Floor Covering Materials.
2. ASTM E648 – Critical Radiant Flux of Floor-Covering Systems (Class I).
3. ASTM E662 – Smoke Density.
4. ASTM D1335 – Tuft Bind of Pile Floor Coverings.
5. ASTM E2179 – Laboratory Measurement of Airborne Sound Reduction of Floor Coverings.

B. CRI (Carpet and Rug Institute):
1. CRI Green Label Plus.

1.3 SUBMITTALS

A. Product Data:
1. Manufacturer’s data for carpet tile, backing, and installation system.

B. Samples:
1. Full-size manufacturer samples for Architect’s selection.
2. Minimum three representative options from Basis-of-Design collection.

C. Indoor Air Quality Submittals:
1. CRI Green Label Plus or equivalent certification.

D. Cost/Allowance Documentation:
1. Submit documentation showing material plus standard installation cost per square yard for selected product.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:
1. Minimum 3 years experience installing commercial carpet tile systems.

B. Preinstallation Conference:
1. Review substrate conditions, plywood underlayment requirements, adhesive system, layout, transitions, and protection.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver in original packaging with labels intact.

B. Store flat in clean, dry, conditioned space.

C. Acclimate materials per manufacturer requirements.

1.6 PROJECT CONDITIONS

A. Environmental Conditions:
1. Maintain temperature and humidity within manufacturer’s recommended limits before, during, and after installation.

B. Substrate Conditions:
1. Substrates shall be dry, secure, smooth, and free of contaminants.
2. Carpet tile shall not be installed until plywood underlayment is fully fastened and ready to receive flooring.

1.7 DESIGNATION / COST RANGE REQUIREMENT

A. Provide carpet tile selection such that material plus standard installation is within an installed cost range of $30 to $50 per square yard.

B. Installed cost excludes extraordinary substrate remediation beyond specified plywood underlayment.

PART 2 – PRODUCTS

2.1 BASIS-OF-DESIGN PRODUCT

A. Patcraft – Mid Century Mad Collection, 24-inch by 24-inch carpet tile.

B. Color and Pattern:
1. Architect to select from manufacturer’s full collection line.

2.2 ACCEPTABLE MANUFACTURERS

A. Basis-of-Design: Patcraft.

B. Acceptable Alternatives (meeting requirements of this Section):
1. Shaw Contract Group.
2. Mohawk Group.

C. System Coordination:
1. Carpet tile, backing, and modular adhesive system shall be provided as a coordinated system recommended by the manufacturer.

2.3 CARPET TILE REQUIREMENTS

A. Size:
1. 24 inches by 24 inches.

B. Performance:
1. Radiant flux: ASTM E648, Class I.
2. Smoke density: ASTM E662.
3. Tuft bind: Comply with ASTM D1335.

C. Indoor Air Quality:
1. Carpet tile and installation materials shall be low-emitting and CRI Green Label Plus certified.

D. Stain Resistance:
1. Provide enhanced stain and soil resistance suitable for public library use.

E. Acoustics:
1. Provide carpet tile backing and installation system with improved sound absorption characteristics.
2. Submit available acoustic performance data for selected product.

2.4 INSTALLATION SYSTEM

A. Provide manufacturer’s recommended modular adhesive system, including:
1. Proprietary dot adhesive system (e.g., Patcraft/Shaw LokDots or equivalent), or
2. Manufacturer-provided adhesive-backed or pressure-sensitive modular system.

B. System shall allow individual tile replacement and be suitable for higher-traffic commercial use.

2.5 ACCESSORIES

A. Transitions:
1. Provide metal or rubber reducers and edge strips at adjacent hard flooring.

B. Coordination:
1. Coordinate transitions with rubber stair landings and other resilient flooring sections.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that 1/4-inch plywood underlayment is:
1. Securely fastened.
2. Flat, smooth, and free of joints telegraphing through.
3. Properly acclimated to interior conditions.

B. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Sand or fill plywood joints and fastener heads as required to provide smooth surface.

B. Remove dust and contaminants prior to adhesive application.

C. Prime substrate only if required by manufacturer.

3.3 INSTALLATION

A. Install carpet tile strictly in accordance with manufacturer’s instructions.

B. Layout:
1. Establish reference lines to produce balanced layout and minimize perimeter cuts.

C. Adhesive System:
1. Install using manufacturer’s modular adhesive system; do not substitute full-spread adhesive unless approved.

D. Installation Quality:
1. Install tiles tight, aligned, and flush with no gaps, curling, or peaking.

3.4 CLEANING AND PROTECTION

A. Clean flooring per manufacturer recommendations.

B. Protect from construction traffic and staining until Substantial Completion.

END OF SECTION

SECTION 099000

PAINTING AND COATING

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Field painting of exposed interior items and surfaces.
2. Field painting of exposed exterior items and surfaces.
3. Surface preparation for painting.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. ~~Section 051200 - STRUCTURAL STEEL FRAMING for shop priming structural steel.~~
2. Section 055000 - METAL FABRICATIONS for shop priming ferrous metal.
3. Section 055150 - METAL RAILINGS for shop priming ferrous metal.
4. Section 064020 - INTERIOR ARCHITECTURAL WOODWORK for shop priming interior architectural woodwork.
5. Section 081430 - STILE AND RAIL WOOD DOORS for factory finishing.
6. Section 092110 - GYPSUM BOARD ASSEMBLIES for surface preparation of gypsum board.

1.3 DEFINITIONS AND EXTENT

A. General: Standard coating terms defined in ASTM D 16 apply to this Section.

1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

B. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces.

1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

C. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.

1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.

D. Do NOT paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

1. Prefinished items include the following factory-finished components:

a. Architectural woodwork.
b. Acoustical wall panels.
c. Toilet enclosures.
d. Metal lockers.
e. Kitchen appliances.
f. Elevator entrance doors and frames.
g. Elevator equipment.
h. Finished mechanical and electrical equipment.
i. Light fixtures.

2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:

a. Foundation spaces.
b. Furred areas.
c. Ceiling plenums.
d. Utility tunnels.
e. Pipe spaces.
f. Duct shafts.
g. Elevator shafts.

3. Finished metal surfaces include the following:

a. Anodized aluminum.
b. Stainless steel.
c. Chromium plate.
d. Copper and copper alloys.
e. Bronze and brass.

4. Operating parts include moving parts of operating equipment and the following:

a. Valve and damper operators.
b. Linkages.
c. Sensing devices.
d. Motor and fan shafts.

5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1.4 SUBMITTALS

A. Product Data: For each paint system indicated. Include block fillers and primers.

1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

a. Disclose material ingredients by name and Chemical Abstract Service (CAS) Registry Number.

2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.

B. Samples for Verification: For each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.

1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
2. Provide a list of materials and applications for each coat of each Sample. Label each Sample for location and application.
3. Submit two 8 inch by 12 inch Samples for each type of finish coating for Architect's review of color and texture only.

C. Qualification Data: For Applicator.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

B. Source Limitations: Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.

C. Mockups: Provide a full-coat benchmark finish sample for each type of coating and substrate required. Comply with procedures specified in PDCA P5. Duplicate finish of approved sample Submittals.

1. Architect will select one room or surface to represent surfaces and conditions for application of each type of coating and substrate.

a. Wall Surfaces: Provide samples on at least 100 sq. ft.
b. Small Areas and Items: Architect will designate items or areas required.

2. Apply benchmark samples, according to requirements for the completed Work, after permanent lighting and other environmental services have been activated. Provide required sheen, color, and texture on each surface.

a. After finishes are accepted, Architect will use the room or surface to evaluate coating systems of a similar nature.

3. Final approval of colors will be from benchmark samples.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers 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.

1.7 PROJECT CONDITIONS

A. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.

B. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.

C. Do not apply paint 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.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.8 EXTRA MATERIALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: Furnish four unopened gallons of each type of paint and coating work, in color and gloss as used for the Project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work are listed in the Finish Schedule at the end of this Section.

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Paint Colors (PT-#): Refer to the Finish Schedule on the Drawings.

D. VOC Content for Interior Paints and Coatings: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1. Flat Paints and Coatings: 50 g/L (SCAQMD and CARB).
2. Nonflat Paints and Coatings: 50 g/L (SCAQMD) or 100 g/L (CARB).
3. Nonflat, High Gloss Paints and Coatings: 50 g/L (SCAQMD) or 150 g/L (CARB).
4. Dry-Fog Coatings: 50 g/L (SCAQMD) or 150 g/L (CARB).
5. Primers, Sealers, and Undercoaters: 100 g/L.
6. Anticorrosive and Antirust Paints Applied to Ferrous Metals (Industrial Maintenance and Rust Preventative Coatings): 100 g/L (SCAQMD) or 250 g/L (CARB).
7. Zinc-Rich Industrial Maintenance Primers: 100 g/L (SCAQMD) or 340 g/L (CARB).
8. Pretreatment Wash Primers: 420 g/L.
9. Floor Coatings: 50 g/L (SCAQMD) or 100 g/L (CARB).
10. Shellacs, Clear: 730 g/L.
11. Shellacs, Pigmented: 550 g/L.
12. Clear Wood Finishes: 275 g/L.
13. Stains, Exterior: 100 g/L (SCAQMD) or 250 g/L (CARB).
14. Stains, Interior: 250 g/L.

E. Low-Emitting Materials: Interior paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application.

1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.

2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

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

3.2 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.

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

B. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions and technical bulletins for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and reprime.
2. Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces if moisture content exceeds that permitted in manufacturer's written instructions.
c. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.

3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.
c. If transparent finish is required, backprime with spar varnish.
d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.
e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.

a. Exterior Exposed Steel: Clean steel surfaces in accordance with SSPC-SP 6/NACE No. 3 Commercial Blast Cleaning. Abrasive blast cleaned surfaces shall exhibit a uniform, angular profile of 1.5-3.0 mils. Prime cleaned surfaces within 8 hours and prior to surface rusting.
b. Interior Exposed Steel, in Humid Environments: Clean steel surfaces in accordance with SSPC-SP 6/NACE No. 3 Commercial Blast Cleaning. Abrasive blast cleaned surfaces shall exhibit a uniform, angular profile of 1.5-3.0 mils. Prime cleaned surfaces within 8 hours and prior to surface rusting.
c. Interior Exposed Steel, in Dry Environments: Clean steel surfaces in accordance with SSPC-SP2 or SP3 Hand or Power Tool Cleaning.

5. Galvanized Surfaces: Clean galvanized surfaces in accordance with SSPC-SP16 Brush off Blast Cleaning of Galvanized Steel and NonFerrous Metals, to achieve a minimum 1 mil anchor profile.

D. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
3. Provide finish coats that are compatible with primers used.
4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.

5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
7. Paint backsides of access panels and removable or hinged covers to match exposed surfaces.
8. Finish exterior doors and doors in wet areas on tops, bottoms, and side edges the same as exterior faces.
9. Sand lightly between each succeeding enamel or varnish coat.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. Omit primer over metal surfaces that have been shop primed and touchup painted.
3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.

E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.

F. Mechanical items to be painted include, but are not limited to, the following:

1. Uninsulated metal piping.
2. Uninsulated plastic piping.
3. Pipe hangers and supports.
4. Tanks that do not have factory-applied final finishes.
5. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.

6. Duct, equipment, and pipe insulation having "all-service jacket" or other paintable jacket material.
7. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

G. Electrical items to be painted include, but are not limited to, the following:

1. Switchgear.
2. Panelboards.
3. Electrical equipment that is indicated to have a factory-primed finish for field painting.

H. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

I. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

K. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.

1. Provide satin finish for final coats.

L. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 FIELD QUALITY CONTROL

A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied:

1. The Owner will engage a qualified independent testing agency to sample paint material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in the presence of Contractor.
2. Testing agency will perform appropriate tests for the following characteristics as required by the Architect.
3. The Architect may direct Contractor to stop painting if test results show material being used does not comply with specified requirements. Contractor shall remove noncomplying paint from Project site, pay for testing, and repaint surfaces previously coated with the noncomplying paint. If necessary, Contractor may be required to remove noncomplying paint from previously painted surfaces if, on repainting with specified paint, the two coatings are incompatible.

3.5 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.6 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.7 PAINT SCHEDULE

A. Schedule: Provide products and number of coats specified. Use of manufacturer's proprietary product names to designate colors, materials, generic class, standard of quality and performance criteria and is not intended to imply that products named are required to be used to the exclusion of equivalent performing products of other manufacturers.

B. Exterior Paint Schedule:

1. As indicated on Drawings.
2. Or approved equal.

C. Interior Paint Schedule, Typical:

1. As indicated on Drawings.
2. Or approved equal.

D. Mechanical and Electrical Work: Paint all exposed items throughout the project except factory finished items with factory-applied baked enamel finishes which occur in mechanical rooms or areas, and excepting chrome or nickel plating, stainless steel, and aluminum other than mill finished. Paint all exposed ductwork and inner portion of all ductwork. Same as specified for other interior metals, hereinabove.

END OF SECTION

SECTION 101400

SIGNAGE

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Code-required interior panel signage, including but not limited to, accessibility signage, toilet room signage and mechanical and electrical room signage.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

~~1. Section 062010 - EXTERIOR FINISH CARPENTRY for exterior wood sign.~~
2. Division 26 - ELECTRICAL for illuminated exit signs.

1.3 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.

B. Shop Drawings: Include plans, elevations, and large-scale sections of typical members and other components. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement, accessories, and installation details.

1. Provide message list for each sign, including large-scale details of wording, lettering, artwork, and braille layout.

C. Samples for Verification: For each type of sign, include the following Samples to verify color selected:

1. Panel Signs: Full-size Samples of each type of sign required.
2. Approved samples will not be returned for installation into Project.

D. Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each sign type through one source from a single manufacturer.

B. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

1.5 PROJECT CONDITIONS

A. Field Measurements: Where sizes of signs are determined by dimensions of surfaces on which they are installed, verify dimensions by field measurement before fabrication and indicate measurements on Shop Drawings.

1.6 COORDINATION

A. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.

PART 2 - PRODUCTS

2.1 PANEL SIGNS

A. General: Provide signs that comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction as indicated. Produce smooth panel sign surfaces constructed to remain flat under installed conditions within tolerance of plus or minus 1/16 inch measured diagonally. Provide the following:

1. Code-Required Signs for Certificate of Occupancy:

a. Type: Photopolymer on acrylic or printed acrylic / aluminum as applicable.
b. Color: Selected from manufacturer’s standard colors including metallic silver, off white, champagne, light gray, dark red, dark green, dark blue, dark bronze, charcoal.
c. Type Size: As selected.
d. Typeface: As selected.

2. Interior Signs Based on Owner’s Requirements:

a. Type: Photopolymer on acrylic or printed acrylic as applicable.
b. Color: Selected from manufacturer’s standard colors including metallic silver, off white, champagne, light gray, dark red, dark green, dark blue, dark bronze, charcoal.
c. Type Size: As selected.
d. Typeface: As selected.

~~3. Exterior Signs: Painted wood.~~

~~a. As indicated on the Drawings.~~

B. Tactile and Braille Copy: Manufacturer's standard process for producing copy complying with ADA Accessibility Guidelines and ICC/ANSI A117.1. Text shall be accompanied by Grade 2 braille. Produce precisely formed characters with square cut edges free from burrs and cut marks.

1. Raised-Copy Thickness: Not less than 1/32 inch

C. Symbols of Accessibility: Provide 6-inch- high symbol fabricated from opaque nonreflective vinyl film, 0.0035-inch nominal thickness, with pressure-sensitive adhesive backing suitable for both exterior and interior applications.

2.2 ACCESSORIES

A. Mounting Methods: Use double-sided vinyl tape fabricated from materials that are not corrosive to sign material and mounting surface.

B. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Verify that items provided under other sections of Work are sized and located to accommodate signs.

C. Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.

1. Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
2. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches of sign without encountering protruding objects or standing within swing of door.

B. Wall-Mounted Panel Signs: Attach panel signs to wall surfaces using methods indicated below:

1. Vinyl-Tape Mounting: Use double-sided foam tape to mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by the Architect.

END OF SECTION

SECTION 102800
TOILET ACCESSORIES

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

   a. Toilet accessories.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

   a. Section 061000 - ROUGH CARPENTRY for blocking.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:

   a. Construction details and dimensions.
   b. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
   c. Material and finish descriptions.
   d. Features that will be included for Project.
   e. Manufacturer's warranty.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

   a. Identify locations using room designations indicated on Drawings.
   b. Identify products using designations indicated in the Specifications.

C. Maintenance Data: For toilet accessories to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.

1.5 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch minimum nominal thickness, unless otherwise indicated.

B. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.0359-inch (0.9-mm) minimum nominal thickness.

C. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

D. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

2.2 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. A & J Washroom Accessories, Inc.
b. American Specialties, Inc.
c. Bobrick Washroom Equipment, Inc.
d. Bradley Corporation.

2.3 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to the Owner.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.
C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION

SECTION 104400

FIRE-PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Portable fire extinguishers.
2. Mounting brackets for fire extinguishers.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Section 099000 - PAINTING AND COATING for field painting fire-protection cabinets.
2. ~~Division 21 - FIRE PROTECTION for fire hose valves and standpipes.~~

1.3 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each item.

1. Fire Extinguishers: Include rating and classification.

B. Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain fire extinguishers and fire-protection cabinets through one source from a single manufacturer.

B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

C. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1.5 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

PART 2 - PRODUCTS

2.1 PORTABLE FIRE EXTINGUISHERS

A. General: Provide fire extinguishers of type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.

B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 2-A:10-B:C, 5-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

C. Kitchen Type in Aluminum or Steel Container: UL-rated Type K, 5-lb nominal capacity, with dry chemical, as approved by local authorities having jurisdiction.

2.2 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

2.3 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging. Contractor shall be responsible for fire extinguisher tagging by a certified service technician located within 75 miles of the project.

1. Remove and replace damaged, defective, or undercharged units.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install fire-protection specialties in locations and at mounting heights indicated on the Drawings and acceptable to authorities having jurisdiction.

B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

C. Identification: Apply vinyl lettering at locations indicated.

3.3 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection specialties are installed, unless otherwise indicated in manufacturer's written installation instructions.

B. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet manufacturer.

END OF SECTION

SECTION 113100

APPLIANCES

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Appliances.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Division 22 - PLUMBING for water distribution piping connections, drainage and vent piping connections, sinks, and waste disposers.
2. Division 26 - ELECTRICAL for services and connections to appliances.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Include operating characteristics, dimensions of individual appliances, and finishes for each appliance.

B. Appliance Schedule: For appliances; use same designations indicated on Drawings.

C. Maintenance Data: For each product to include in maintenance manuals.

D. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer for installation and maintenance of units required for this Project.

B. Source Limitations: Provide products from same manufacturer for each type of appliance required.

C. Regulatory Requirements: Comply with provisions of the following product certifications:

1. NFPA: Provide electrical appliances listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

2. UL and NEMA: Provide electrical components required as part of residential appliances that are listed and labeled by UL and that comply with applicable NEMA standards.
3. ANSI: Provide gas-burning appliances that comply with ANSI Z21 Series standards.

D. Regulatory Requirements, Accessibility: Where residential appliances are indicated to comply with accessibility requirements, comply with Massachusetts Architectural Access Board requirements and the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

E. Energy Ratings: Provide residential appliances that carry labels indicating energy-cost analysis (estimated annual operating costs) and efficiency information as required by the FTC Appliance Labeling Rule.

1. Provide appliances that qualify for the EPA/DOE ENERGY STAR product labeling program.

F. Switches: Provide mercury-free switches in appliances.

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.5 WARRANTY

A. Special Warranties: Manufacturer's standard form in which manufacturer of each appliance specified agrees to repair or replace residential appliances or components that fail in materials or workmanship within manufacturer's standard warranty period.

PART 2 - PRODUCTS

2.1 APPLIANCES

A. Appliance Schedule: Refer to Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Examine roughing-in for piping systems to verify actual locations of piping connections before equipment installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Comply with manufacturer's written instructions.

1. Range Hood, Exhaust Fans, and Dryer Vents: Vent directly to the building exterior.

B. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and rough openings are completely concealed.

C. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

D. Utilities: Refer to Division 22 - PLUMBING for plumbing requirements and Division 26 - ELECTRICAL for electrical requirements.

3.3 CLEANING AND PROTECTION

A. Test each item to verify proper operation. Make necessary adjustments.

B. Verify that accessories required have been furnished and installed.

C. Remove packing material from appliances and leave units in clean condition, ready for operation.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train the Owner’s maintenance personnel to adjust, operate, and maintain appliances.

END OF SECTION

SECTION 123570

RESIDENTIAL CASEWORK

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Kitchen base and wall cabinetry.
2. Bathroom vanities.
3. Cabinet hardware.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Section 061000 - ROUGH CARPENTRY for wood furring, blocking, shims, and hanging strips required for installing casework and concealed within other construction before casework installation.
2. Section 064020 - INTERIOR ARCHITECTURAL WOODWORK for countertops.
3. Section 113100 - APPLIANCES for residential appliances.

1.3 DEFINITIONS

A. Exposed Surfaces: Surfaces visible when drawers and opaque doors are closed; behind clear glass doors; bottoms of casework 43 inches or more above finished floor.

B. Semi-Exposed Surfaces: Surfaces which become visible when opaque doors are open or drawers are extended; bottoms of casework are more than 30 inches and less than 42 inches above finished floor.

C. Concealed Surfaces: Surfaces considered concealed when surfaces not visible after installation; bottoms of casework less than 30 inches above finished floor; tops of casework over 78 inches above finished floor and not visible from an upper level; stretchers, blocking, and components concealed by drawers.

D. Reveal Overlay: Door and drawer faces partially cover cabinet frame.

E. Flush Overlay: Door and drawer faces cover cabinet frame with space between faces sufficient for operating clearance.

F. Flush: Door and drawer faces flush with cabinet face.

1.4 SUBMITTALS

A. Product Data: For each type of product specified, including casework, hardware, and accessories, and finishing materials and processes.

B. Shop drawings for casework showing location and size, accessories, materials, finishes, and filler panels. Include fully dimensioned plans, elevations, and anchorage details to countertop and walls.

C. Samples for initial selection purposes of manufacturer's color charts in the form of unit sections showing the full range of colors, textures, and patterns available for each type of material indicated or exposed to view.

D. Samples for verification purposes in full-size units of each type of material indicated; in sets for each color, texture, and pattern specified, showing the full range of variations expected in these characteristics.

1. 12-inch-square samples of wood with a transparent finish for each species.
2. 12-inch-square samples of veneered plywood with a transparent finish.
3. One unit of each type of exposed hardware.

E. Product certificates signed by the manufacturer certifying that materials furnished comply with specified requirements.

1.5 QUALITY ASSURANCE

A. Certifications: Continuously tested, certified and display label or seal of Kitchen Cabinet Manufacturer’s Association (KCMA) in accordance with ANSI Z34.1.

1. HUD Minimum Property Standards for Housing, Paragraph 611-1.
2. HUD Severe Use Cabinets: Bear KCMA Certification Seal and additional label indicating conformance to HUD Severe Use specifications.

B. Single-Source Responsibility: Obtain kitchen casework from one source of a single manufacturer.

C. Performance Requirements: Comply with tests procedures and required performances of ANSI/KCMA A161.1.

1. Tests: Performed on standard 30 inch wall and base cabinets.
2. Drawers and Drawer Hardware for HUD Severe Use: Apply 75 pound point load to exterior edge of drawer extended 6 inches from its closed position for period of 15 minutes.

a. Successful Test: No failure in any part of drawer assembly or operating system and drawer remain operable with no mechanical interference with any part of cabinet assembly.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver casework as factory-assembled units, packaged individually.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Comply with casework manufacturer's written requirements for temperature and humidity conditions during storage and installation. Do not install casework until these conditions have been attained and stabilized.

B. Field Measurements: Verify casework dimensions by field measurements. Verify kitchen casework can be installed in compliance with the original design and referenced standards.

PART 2 - PRODUCTS

2.1 SUSTAINABLE DESIGN REQUIREMENTS

A. Recycled Content of Medium-Density Fiberboard and Particleboard: Provide products with an average recycled content so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

B. Composite Wood, General: CARB II compliant or made with binder containing no added formaldehyde (NAF).

2.2 MANUFACTURERS

A. Acceptable Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Advanta (formerly Armstrong); Extreme series.
2. Mid-America; Severe Use series.
3. Smart Cabinetry.
4. Tru-Wood Cabinets Inc.; Severe Use series.

2.3 MATERIALS

A. Cabinet Materials:

1. Plywood: ANSI/HPMA HP and PS 1.
2. Pressure Treated Lumber: AWPA C2.
3. Cabinet Hardware: ANSI/BHMA A156.9, with corrosion-resistant finishes.

B. Wall and Base Cabinets:

1. Construct to produce sturdy and rigid construction.
2. Wall and Base Cabinets: Constructed of solid lumber and/or exterior grade plywood with wood veneer core.

a. Particleboard, flakeboard, fiberboard, or hardboard not allowed.

3. Base Cabinets:

a. Parts Touching Floor: Pressure treated solid lumber.
b. Provide integral toe space of minimum 3 inches by 3 inches.
c. Toe Kicks: 3/4inch net thickness, pressure treated solid lumber.

C. Face Frames: 3/4 inches net thick kiln dried solid hardwood, free of knots and selected for light uniform color suitable for stain finish.

1. Frames: Mortised and tenoned, dovetailed or doweled, glued and stapled under pressure and filled and sanded.
2. Vertical End Members (Stiles): Minimum 1-1/2 inch net width.
3. Vertical Center Members between Doors and Drawers (Mulls): Minimum 2 inches net width.
4. Horizontal Members (Rails): 1-3/4 inches net width.
5. Stiles and Top and Bottom Rails: Dadoed to receive ends, bottoms and tops.

D. Doors and Door Hardware:

1. Doors: 3/4 inch thick 7-ply A-D grade exterior hardwood plywood with no more than one veneer joint on face.
2. Edges: Reversed shaped to form continuous finger grip around sides.
3. Edges: Filled and sanded smooth prior to finish.
4. Edges: May be treated with hot foil transfer.
5. Edges: May be covered with 3/8 inch by 3/4 inch reverse shaped hardwood bands.
6. Acceptable Hardwoods: Beech, birch, maple or oak suitable for stain finish.
7. Hinges: Manufacturer's standard heavy duty with self-closing feature, face mount or semi-concealed type.

E. Drawers and Drawer Hardware:

1. Fronts Construction and Finish: Same as doors.
2. Sides and Backs: Minimum 11/16 inch net thickness Grade C solid lumber with sides dovetailed or mortised and tenoned into fronts.
3. Backs: Dadoed into sides.
4. Bottoms: Minimum 1/4 inch softwood or hardwood exterior plywood let into front, sides and back.
5. Drawer Parts: Glued and nailed or stapled together.
6. Drawer Slides: BHMA A156.9, B05091 (Grade 1); side mounted and extending under bottom edge of drawer; full-extension type; epoxy-coated-steel with steel ball-bearings; 75 lb. min. capacity.
7. Cabinet Members or Guides: Attached at rear to 3/4 inch solid lumber hanging rail or 1/2 inch solid lumber or plywood block which is attached to 3/4 inch solid lumber hanging rail by use of metal rear mount brackets or by continuous wraparound method.

F. Installation Cleats: Minimum 3/4 inch by 3-1/2 inches net thickness S4S, Grade C, kiln dried solid lumber, dadoes to receive bottoms and tops.

1. Provide two horizontal members running full length of cabinet at top and bottom.
2. Base Cabinets with Drawers: Side mount drawer slide bracket(s) rigidly attached to 1/2 inch thick plywood or wood block which is rigidly attached to top cleat.

G. End Panels:

1. Exposed End Panels: Minimum 2-2 Grade, 1/2 inch thick 5-ply exterior hardwood plywood, selected for light uniform color.
2. Ends Not Exposed : May be 1/2 inch exterior softwood plywood, Grade A-D, with Grade A side to inside of cabinet.
3. Ends: Dadoed minimum of 1/4 inch deep to receive shelves, bottoms and tops.
4. Ends: Let into dado in face frame.

5. Base Cabinet End Panels: Stop 3-1/2 inches above floor and supported by 3/4 inch by 3-1/2 inch pressure treated solid lumber member.

H. Shelves and Wall Cabinet Bottoms: 1/2 inch thick Grade 2-2 exterior hardwood plywood or Grade A-D exterior softwood plywood with wood banded front edge or 3/4 inch net thickness solid lumber.

1. Shelves: Let into dadoes of end panels and braced behind mulls.
2. Bottoms: Let into (rabbet or dado, manufacturers choice) ends, cleats and front frames.
3. Shelves and Bottoms: Glued and stapled.
4. Adjustable Shelves: 3/4 inch thick Grade 2-2 exterior hardwood plywood of Grade A-D exterior softwood plywood with wood banded front edge or 3/4 inch net thickness solid lumber.

   a. Shelves: Support as necessary to comply with shelf deflection provisions of ANSI/KCMA A161.1.
   b. Shelves: When loaded at 15 PSF for seven days shall not deflect more than 1/16 inch per linear foot between supports.
   c. Maximum Deflection: 1/4 inch between supports.

I. Backs: Provide on cabinets (optional on sink bases depending on job conditions).

1. Backs: Minimum 1/4 inch thick Grade 2-2 exterior hardwood plywood or A-D grade exterior softwood plywood.
2. Backs: Securely glued and stapled to ends, 3-1/2 inch cleats and shelves of cabinet.
3. Backs: May be let into dado of ends and cleats or may be applied flush with ends and cleats.

J. Base Bottoms: 1/2 inch thick Grade 2-2 exterior hardwood plywood or A-C Grade exterior softwood plywood.

1. Bottoms: Let into (rabbet or dado, manufacturers choice) end panels, front rails and installation cleats.
2. Bottom: Supported by 3/4 inch net thickness pressure treated solid lumber braces 24 inches OC running front to rear of cabinet and resting on finished floor.

2.4 MISCELLANEOUS MATERIALS

A. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel expansion sleeves for drilled-in-place anchors.

B. Installation Adhesives and Wood Glues: Formulations approved for use indicated by adhesive manufacturer.

1. Low-Emitting Materials: Provide adhesives in compliance with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
2. VOC Limits: Use installation adhesives that comply with the following limits for VOC content:

   a. Wood Glues: 30 g/L.

b. Contact Adhesives: Not permitted on the Project without Architect's prior approval.

3. Do not use adhesives that contain urea formaldehyde.
4. Methylene chloride and perchloroethylene may not be intentionally added to adhesives.

2.5 WOOD CASEWORK FINISHES

A. Factory Finishing: To the greatest extent possible, finish casework at factory. Defer only final touch-up until after installation.

B. Cabinet Finish: Comply with ANSI/KCMA A161.1 finish test and performance requirements.

1. Exposed Surfaces and Interior of Cabinet: Factory finished consisting of stain, sealer and top coat, lightly sanded between application.

a. Sealer and Top Coats: Oven dried.
b. Stain Color: Selected by Architect from manufacturer's standard colors.

2. Toe Kick: Painted as directed by the Architect.

C. Finish: As selected by the Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of casework.

B. Before installation, condition casework to average prevailing humidity conditions in installation areas.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install casework with no variations in flushness of adjoining surfaces using concealed shims. Where casework abuts other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match casework face.

B. Install casework without distortion so that doors and drawers fit openings properly and are aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessories as indicated.

C. Install casework level and plumb to a tolerance of 1/8 inch in 8 feet.

D. Fasten unit of casework to adjacent unit and into structural support members of wall construction with #10 sheet metal or wood screws with washer head or washer.

1. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c.

3.3 ADJUSTING AND CLEANING

A. Adjust hardware to center doors and drawers in openings and lubricate to provide unencumbered operation.

B. Clean casework on exposed and semi-exposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

END OF SECTION

SECTION 142400
VERTICAL PLATFORM LIFTS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
1. Furnishing and installation of a vertical platform lift.
2. Associated doors, controls, and safety equipment.
3. Coordination with architectural, electrical, and structural work.

B. Project Context:
1. Work under this Section is part of a historic rehabilitation project of an existing wood-framed building.
2. Lift installation shall minimize alteration to historic fabric while complying with applicable accessibility codes.

1.2 REFERENCES

A. ASME:
1. ASME A18.1 – Safety Standard for Platform Lifts and Stairway Chairlifts.

B. ADA Standards for Accessible Design.

C. Applicable state and local elevator and accessibility regulations.

1.3 SUBMITTALS

A. Product Data:
1. Manufacturer’s technical data, planning drawings, and specifications for the vertical platform lift and doors.

B. Shop Drawings:
1. Plan, section, and elevation drawings showing lift layout, pit, overhead clearances, and door locations.
2. Electrical requirements and interface with building systems.

C. Certificates:
1. Manufacturer’s certification of compliance with ASME A18.1 and ADA requirements.

D. Operation and Maintenance Manuals.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications:
1. Vertical platform lift manufacturer with a minimum of 10 years experience producing ASME A18.1–compliant lifts.

B. Installer Qualifications:
1. Authorized installer approved by the lift manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver lift components in manufacturer’s original packaging.

B. Store components in a clean, dry, protected interior location.

1.6 WARRANTY

A. Provide manufacturer’s standard warranty for lift equipment and components.

PART 2 – PRODUCTS

2.1 MANUFACTURER

A. Basis-of-Design Manufacturer:
1. Savaria.

B. Authorized Installer / Recommended Project Contact:
1. Accessibility Systems, Inc.
Contact: Bob Weber
P.O. Box 766
527 Hinesburg Road
Richmond, VT 05477
Phone: (802) 434-3499
Email: info@accessibilitysystems.com

C. Substitutions:
1. No substitutions permitted.

2.2 VERTICAL PLATFORM LIFT

A. Model:
1. Savaria V-1504 Vertical Platform Lift.

B. Configuration:
1. Stops: 2 (First Floor and Second Floor).
2. Travel: As required for project conditions.

C. Platform (Cab) Size:
1. 42 inches wide × 60 inches deep.

D. Cab Type:
1. Type 1L.

E. Cab Wall Height:
1. Standard height cab walls – 42-1/8 inches.

F. Capacity:
1. As rated by manufacturer for the specified model and configuration.

2.3 DOORS AND ENCLOSURE

A. Doors:
1. Full-height automatic Prodoor at First Floor.
2. Full-height automatic Prodoor at Second Floor.

B. Door Size:
1. 36 inches clear width.

C. Door Operation:
1. Right-hand operation at both floors.

D. Enclosure Conditions:
1. Full-height hoistway walls provided by others at both floors.

2.4 CONTROLS AND SAFETY FEATURES

A. Controls:
1. Constant-pressure push-button controls.
2. Call/send stations at each landing.

B. Safety Features (Standard):
1. Emergency stop.
2. Obstruction sensing.
3. Emergency lowering system.
4. Code-required interlocks and safety devices.

2.5 FINISHES

A. Platform and Cab Finishes:
1. Manufacturer’s standard finishes unless otherwise indicated.

B. Door Finishes:
1. Manufacturer’s standard finish compatible with interior finishes.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that hoistway construction, pit, overhead clearances, and door openings are complete and in accordance with manufacturer’s requirements prior to installation.

B. Verify electrical power is available and properly sized.

3.2 INSTALLATION

A. Install vertical platform lift in strict accordance with:
1. Manufacturer’s written instructions.
2. ASME A18.1.
3. Applicable codes and regulations.

B. Coordinate installation with architectural finishes to avoid damage to historic materials.

3.3 FIELD QUALITY CONTROL

A. Testing:
1. Test lift operation, controls, and safety devices.
2. Demonstrate proper operation to Owner.

B. Inspection:
1. Obtain required inspections and approvals by Authority Having Jurisdiction.

3.4 ADJUSTING AND CLEANING

A. Adjust lift for smooth, quiet operation.

B. Clean exposed surfaces and remove construction debris.

3.5 TRAINING

A. Provide Owner training on lift operation, safety features, and routine maintenance.

END OF SECTION