CLACKAMAS COMMUNITY COLLEGE

ROOK HALL TI

PROJECT MANUAL - VOLUME 1 OF 2

SPECIFICATIONS DIVISIONS 01 - 14

PERMIT & BID SET
MAY 7, 2021

~~PERMIT SET~~
~~APRIL 22, 2021~~

opsis

SECTION 00 01 00 - SPECIFICATIONS TABLE OF CONTENTS

PROJECT MANUAL VOLUME 1 OF 2

THIS PAGE INTENTIONALLY BLANK

SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Owner-furnished products.
3. Work by Owner.
4. Access to site and premises.
5. Work restrictions.
6. Owner Occupancy.
7. Specification and Drawing conventions.

1.3 PROJECT

A. Project Name: CCC Rook Hall TI located at Clackamas Community College.

B. Owner's Name: Clackamas Community College, 19600 South Molalla Ave, Oregon City, OR 97054.

C. Architect: Opsis Architecture, 920 NW 17th Avenue, Portland, OR 97209, (503) 525-9511.

D. The Project is alteration to existing secondary education building at Clackamas Community College. Reconfiguration of interior partition walls to create new meeting rooms, classrooms, mother’s room, storage areas; and reconfigured office suite and catering area.

1.4 OWNER-FURNISHED PRODUCTS

A. Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products and making building services connections.

B. Owner-Furnished Products: Food service appliances, furniture, and equipment, as indicated.

1.5 WORK BY OWNER

A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

1.6 CONTRACTOR USE OF SITE AND PREMISES

A. Provide access to and from site as required by law and by Owner:

1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
2. Do not obstruct roadways, sidewalks, or other public ways without permit.
3. Coordinate with Owner for required access during construction.

1.7 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be generally performed during normal business working hours as set forth by the City of Oregon City and the Owner.

1.8 OWNER OCCUPANCY

A. Owner will not occupy the Project during construction.

B. Owner will occupy adjacent parts of building during construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.

C. Schedule the Work to accommodate Owner site requirements.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.

2. Abbreviations and Acronyms: See Drawings for standard and general abbreviations and acronyms.

3. Keynoting: See Drawings for Keynoting definitions. Materials and products are identified by reference acronyms, unless indicated otherwise.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01 20 00 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Procedures for preparation and submittal of applications for progress payments.
2. Procedures for preparation and submittal of application for final payment.

B. Related Requirements:

1. Division 00 “Procurement and Contracting Requirements”: For Contracting Forms and Supplements to be referenced and used.
2. Documentation of changes in Contract Sum and Contract Time: Refer to Section 01 26 05 “Contract Considerations.”

1.3 SCHEDULE OF VALUES

A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.

B. Forms filled out by hand will not be accepted.

C. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.

D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization.

E. Revise schedule to list approved Change Orders, with each Application For Payment.

1.4 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.

C. Forms filled out by hand will not be accepted.

D. For each item, provide a column for listing each of the following:

1. Item Number.
2. Description of work.
3. Scheduled Values.
4. Previous Applications.
5. Work in Place and Stored Materials under this Application.
6. Authorized Change Orders.
7. Total Completed and Stored to Date of Application.
8. Percentage of Completion.
9. Balance to Finish.

10. Retainage.

E. Execute certification by signature of authorized officer.

F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.

H. Submit three copies of each Application for Payment.

I. Include the following with the application:

1. Construction progress schedule, revised and current as specified in Section 01 32 16 “Construction Progress Schedule” .

J. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.5 APPLICATION FOR FINAL PAYMENT

A. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

B. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

C. Application for Final Payment will not be considered until the following have been accomplished:

1. All closeout procedures specified in Section 01 70 00 “Execution Requirements”.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01 25 00 - PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. General requirements for the Work in relation to substitutions and product options.

1.3 REQUESTS FOR SUBSTITUTIONS

A. Requests for substitution of products in place of those specified shall be in accordance with Instructions to Bidders, and as specified herein.

B. Requests for substitution shall be submitted by subcontractors to the General Contractor, not the Architect.

C. Requests for substitution shall be submitted to the Architect only by the General Contractor.

1.4 CONTRACTOR'S RESPONSIBILITIES

A. Review the request for substitution for adherence to the requirements herein and applicability and appropriateness to the Project requirements. Only submit to the Architect those requests for substitution which meet the requirements.

B. Investigate proposed substitution products and determine that they are equal or superior in all respects to products specified.

C. Provide same guarantee for accepted substitutions as for products specified.

D. Coordinate installation of accepted substitutions into the Work, making such changes as may be required for the Work to be complete in all respects, without additional cost to the Owner or the design team.

1.5 SUBSTITUTIONS DURING BIDDING

A. Submit the following information with each request to the Architect:

1. Provide the CSI Substitution Request Form for the Bid Phase, appended here.

2. Comparison of proposed substitution with product, material or system specified.

3. Complete data, substantiating compliance of proposed substitution with the Contract Documents.

4. Test numbers and supporting reports, indicating compliance with referenced standards.

5. Evidence that warranty requirements are acceptable.

6. Details indicating specific deviations proposed for the substitution.

7. Reference and applicable Specification sections.

8. Applicable product samples.

B. All substitution requests shall be received in the Architect’s office no less than ten (10) calendar days before bid closing. Requests received after this date will not be considered.

1.6 SUBSTITUTIONS DURING CONSTRUCTION

A. Substitutions will normally not be considered after date of Contract except when required due to unforeseen circumstances.

B. Within a period of thirty (30) days after date of Contract, the Owner may, at its option, consider formal written requests for substitution of products in place of those specified, when submitted in accordance with the requirements stipulated herein.

C. One or more of the following conditions must be documented and substantiated in any such request:

1. Specified product is no longer available.

2. Specified product is no longer compatible, due to changes in the design during construction.

3. A change in governing regulatory requirements makes a revision in design or material usage mandatory.

4. Substitution offers the owner a substantial advantage in cost, time, energy conservation, or other considerations (provide substantiation for review).

D. If one or more of the conditions indicated above can be documented and substantiated, follow the submittal requirements of the paragraphs at SUBSTITUTIONS DURING BIDDING, EXCEPT:

1. Provide the CSI Substitution Request Form as revised and appended here, for the Construction Administration Phase.

2. All substitution requests shall be received in the Architect's office no less than thirty (30) calendar days before scheduled delivery of submittals for the original product or material. Requests received after this date will not be considered.

1.7 SUBSTITUTIONS NOT PERMITTED

A. Products implied on submittals which have not been specified or approved through the proper substitution process, either during bidding or during construction administration will be rejected.

B. Substitutions will be rejected if acceptance will require substantial revision of the Contract Documents, and the submitter has not indicated intent or ability to compensate the design team for such revisions.

1.8 FORMS

A. Utilize the CSI Substitution Request Form as revised and appended to This section, for the appropriate Project phase:

1. Substitution Request Form for Substitution Requests During Bid Phase.

2. Substitution Request Form for Substitution Requests During Construction Administration Phase.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

S U B S T I T U T I O N R E Q U E S T F O R M
For Substitution Requests Prior to Bidding

Advancement of Construction Technology
The Construction Specifications Institute

TO: _____

PROJECT: _____

SPECIFIED ITEM:

Section	Page	Paragraph	Description

The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION: _____

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes description of changes to Contract Documents which proposed substitution will require for its proper installation.

The undersigned states that the following paragraphs, unless modified on attachments, are ALL correct:

1. THE PROPOSED SUBSTITUTION DOES NOT AFFECT DIMENSIONS SHOWN ON DRAWINGS.
2. THE UNDERSIGNED WILL PAY FOR CHANGES TO THE BUILDING DESIGN, INCLUDING ENGINEERING DESIGN, DETAILING AND CONSTRUCTION COSTS CAUSED BY THE REQUESTED SUBSTITUTION.
3. THE PROPOSED SUBSTITUTION WILL HAVE NO ADVERSE EFFECT ON OTHER TRADES, THE CONSTRUCTION SCHEDULE, OR SPECIFIED WARRANTY REQUIREMENTS.
4. MAINTENANCE AND SERVICE PARTS WILL BE LOCALLY AVAILABLE FOR THE PROPOSED SUBSTITUTION.

The undersigned further states that the function, appearance and quality of the Proposed Substitution are equivalent or superior to the Specified Item.

Submitted by:

Signature: _____

Firm: _____

Address: _____

_____

Date: _____

Telephone: _____

For use by Design Consultant:

☐ Accepted
☐ Accepted as noted
☐ Not Accepted
☐ Received too late

By: _____

Date: _____

Remarks: _____

Attachments: _____

_____

S U B S T I T U T I O N R E Q U E S T F O R M
For Substitution Requests During Construction Administration

Advancement of Construction Technology
The Construction Specifications Institute

TO: _____

PROJECT: _____

SPECIFIED ITEM:

Section	Page	Paragraph	Description

The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION: _____

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes description of changes to Contract Documents which proposed substitution will require for its proper installation.

Substitutions for After Bidding: The undersigned states that the substitution is requested DUE TO AT LEAST ONE of the following conditions (indicate and substantiate condition in attachments; failure to identify one of these conditions will result in rejection of the substitution):

1. SPECIFIED PRODUCT IS NO LONGER AVAILABLE.
2. SPECIFIED PRODUCT IS NO LONGER COMPATIBLE, DUE TO CHANGES IN THE DESIGN DURING CONSTRUCTION.
3. A CHANGE IN GOVERNING REGULATORY REQUIREMENTS MAKES A REVISION IN DESIGN OR MATERIAL USAGE MANDATORY.
4. SUBSTITUTION OFFERS THE OWNER A SUBSTANTIAL ADVANTAGE IN COST, TIME, ENERGY CONSERVATION, OR OTHER CONSIDERATIONS (Provide substantiation for review).

The undersigned further states that the function, appearance and quality of the Proposed Substitution are equivalent or superior to the Specified Item.

Submitted by:

Signature: _____

Firm: _____

Address: _____

_____

Date: _____

Telephone: _____

For use by Design Consultant:

☐ Accepted
☐ Accepted as noted
☐ Revise and Resubmit
☐ Not Accepted

By: _____

Date: _____

Remarks: _____

Attachments: _____

_____

SECTION 01 26 05 - CONTRACT CONSIDERATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Notice to Proceed.
2. Permits and Fees.
3. Procedures for preparation and submittal of applications for progress payments.
4. Documentation of changes in Contract Sum and Contract Time.
5. Change procedures.

1.3 NOTICE TO PROCEED

A. Upon notification by Owner that Agreement has been executed by both parties and proof of insurance has been provided, Owner shall issue to Contractor written Notice to Proceed with Work.

B. Contractor shall commence Work no sooner than commencement of Work date given on written Notice to Proceed and not prior to pre-construction conference.

1.4 PERMITS AND FEES

A. Fees pre-paid by Owner:

1. Building plan check fee.
2. Fire and Life Safety plan check fee.

B. Fees Owner will pay for:

1. Building permit fee.
2. All charges, fees, bonds, inspections and engineering costs required by City for all items included within scope of Work of this Project with the exception items identified as the Contractors responsibility.

C. The Contractor shall obtain:

1. Mechanical permit.
2. Electrical permits including Temporary Power and low voltage systems.
3. Deferred permits.
4. Other miscellaneous municipal fees required for continuity of Work.

1.5 REPROGRAPHICS COSTS

A. Reprographics Costs Paid by Owner:

1. Plan Check and Building Permit Documents.
2. Intermediate and Final Pricing Documents.

3. Final Construction Documents.
4. Revised and Supplemental Construction Documents.

B. Reprographics Costs Paid by Contractor:

1. All submittal materials including shop drawings and product submittals.
2. Record Drawings.
3. Operations and Maintenance Manuals.
4. Pricing documents related to Proposal Requests, Construction Change Directives, Change Requests.
5. Deferred Permit Submittals.

1.6 INSPECTION AND TESTING COSTS

A. Refer to Section 01 40 00 “Quality Requirements” for testing and inspection requirements.

1.7 SCHEDULE OF VALUES

A. Submit Schedule of Values in duplicate within 15 working days after date of Owner-Contractor Agreement.

B. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section.

C. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.

D. Revise schedule to list approved Change Orders, with each Application for Payment.

1.8 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Present required information on electronic media printout.

C. Form: AIA G702 including continuation sheets when required.

D. For each item, provide a column for listing each of the following:

1. Item Number.
2. Description of work.
3. Scheduled Values.
4. Previous Applications.
5. Work in Place and Stored Materials under this Application.
6. Authorized Change Orders.
7. Total Completed to Date of Application.
8. Percentage of Completion.
9. Balance to Finish.
10. Retainage.

E. Execute certification by signature of authorized officer.

F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.

G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.

H. Submit three copies of each Application for Payment.

I. Include the following with the application:

1. Partial release of liens from General Contractor, major Subcontractors and vendors.

2. Affidavits attesting to off-site stored products.

J. Application for Payment - Initial:

1. Administrative actions and submittals which must proceed or coincide with Contractor's first application for payment include, but are not limited to, the following:

a. Listing of sub-contractors, principal suppliers and installers.

b. Schedule of values.

c. Schedule of agreed upon lump sum and unit cost values for change orders.

d. Construction schedule.

e. Schedule of principal products.

f. Schedule of submittals.

g. Listing of Contractor's staff assignments and principal consultants.

h. Copies of acquired building permits and similar authorizations and licenses from governing authorities for current performance of Work.

i. Data needed to acquire Owner's insurance coverage.

j. Initial progress reports, including report of pre-construction meeting.

K. Application for Payment - At Substantial Completion:

1. Following issuance of "Certificate of Completion" and also in part as applicable to prior certificates on portions of completed work as designated, "special" payment application may be submitted by Contractor. Administrative actions and submittals which must proceed or coincide with Contractor's "special" application for payment include, but are not limited to, the following:

a. Certifications by governing authorities and franchised services, assuring Owner's full access to and use of completed Work - "Certificate of Occupancy".

b. Test, adjust, balance records; maintenance instructions, meter readings, start-up performance reports and similar change-over information germane to Owner's occupancy, use, operation and maintenance of completed Work.

c. Final cleaning of Work.

d. Application for reduction (if any) retainage and consent of surety.

e. Advice to Owner on coordination of shifting insurance coverage, including proof of extended coverage as required.

f. Listing of Contractor's incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.

L. Application for Payment - Final Payment:

1. Administrative actions and submittals which must proceed or coincide with Contractor's final application for payment include, but are not limited to, the following:

a. Completion of Project Closeout requirements per Section 01 70 00 “Execution Requirements” and Section 01 78 00 “Closeout Submittals”.

b. Completion of items identified for completion beyond time of Substantial Completion (regardless of whether special payment application was previously made).

c. Assurance, satisfactory to Owner, that unsettled claims will be resolved and that Work not actually completed and accepted will be completed without undue delay.

d. Transmittal of required construction records to Owner.

e. Certified property survey, locating building or addition.

f. Warranties (guarantees), maintenance agreements and similar provisions of Contract Documents.

g. Removal of temporary facilities, services, surplus materials, rubbish and similar elements.

h. Change-over of door locks and other Contractor access provisions to Owner's property.

i. Consent of surety for final payment.

M. Application for Payment - Transmittal Format and Attachments:

1. Submit (3) copies of each payment application. (1) copy shall have attached completed lien wavers and similar attachments.

2. Transmittal form listing complete lien and other attachments shall be attached to each application.

1.9 MODIFICATION PROCEDURES

A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. Architect's Supplemental Instructions (ASI): The Architect will advise of minor changes in the Work not involving an adjustment to Contract or Contract Time as authorized by the Conditions of the Contract by issuing Supplemental Instructions.

C. Construction Change Directive (CCD): Architect or Contractor may issue a document, signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order:

1. The document will describe changes in the Work, and will designate method of determining any change in Contract Sum or Contract Time.

2. Promptly execute the change in Work

D. Proposal Request (PR): The Architect may issue a document which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a

E. stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 5 working days.

F. The Contractor may propose a change by submitting a request for change to the Architect or Owner, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors.

G. Computation of Change in Contract Amount:

1. For change requested by Architect or Owner for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.

2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Owner and reviewed by Architect

H. Substantiation of Costs: Provide full information required for evaluation:

1. On request, provide following data:

a. Quantities of products, labor, and equipment.

b. Taxes, insurance, and bonds.

c. Overhead and profit.

d. Justification for any change in Contract Time.

e. Credit for deletions from Contract, similarly documented.

2. Support each claim for additional costs with additional information:

a. Origin and date of claim.

b. Dates and times work was performed, and by whom.

c. Time records and wage rates paid.

d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

I. Execution of Change Orders (C.O.): Contractor or Architect may issue Change Orders for signatures of parties as provided in the Conditions of the Contract on AIA G701. The Owner and the Contractor's signature are required to fully execute a Change Order. Architect's signature is not required to execute a Change Order.

J. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

K. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

1.10 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract, previous payments, and sum remaining due.

B. Application for Final Payment will not be considered until the following have been accomplished:

1. All closeout procedures specified in Section 01 70 00 “Execution Requirements”.

2. All final closeout submittals have been received and approved.

PART 2 - PRODUCTS

- NOT USED-

PART 3 - EXECUTION

- NOT USED-

END OF SECTION

SECTION 01 31 00 - PROJECT MANAGEMENT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Preconstruction meeting.
2. Progress meetings.
3. Construction progress schedule.
4. Requests for Information (RFI).
5. Digital project management procedures.
6. Coordination drawings.
7. Coordination meetings.

B. Related Requirements:

1. Section 01 33 00 “Submittals”.
2. Section 01 70 00 “Execution Requirements” for additional coordination requirements.
3. Section 01 74 19 “Construction Waste Management” for review of Waste Management Plan.
4. Section 01 78 00 “Closeout Submittals” for Project record documents.

PART 2 - PRODUCTS

- NOT USED -

PART 3 - EXECUTION

3.1 PRECONSTRUCTION MEETING

A. Contractor will schedule a meeting 2 week prior commencing construction.

B. Attendance Required:

1. Clackamas Community College.
2. Architect.
3. Contractor.
4. Major Sub-Contractors.

C. Agenda:

1. Designation of personnel representing the parties to Contract, inspecting agencies, and Architect.
2. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal requests, Change Orders, Requests for Information, and Contract closeout procedures.

3. Project Schedule.
4. Permits.
5. Project Safety and Site Security.
6. Waste Management Plan.

D. Contractor shall record minutes and distribute copies within two days after meeting to participants, with electronic copies to Architect, Clackamas Community College, participants, and those affected by decisions made.

3.2 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum weekly intervals unless otherwise dictated by status of the Work.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Clackamas Community College, Architect, and Architect's Consultant as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems which impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of Request for Information (RFI) Log.
7. Review pending ASIs, COs, CCs, and PRs.
8. Maintenance of progress schedule.
9. Corrective measures to regain projected schedules.
10. 3 Week look-ahead construction schedule.
11. Contractor Quality Control.
12. Maintenance of quality and work standards.
13. Effect of proposed changes on progress schedule and coordination.
14. Waste Management Plan.
15. Other business relating to Work.

E. Contractor shall record minutes and distribute electronic copies within two days after meeting to participants, with copies to Architect, Clackamas Community College, participants, and those affected by decisions made. Provide hard-copies at following project meeting.

3.3 CONSTRUCTION PROGRESS SCHEDULE

A. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

B. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.

1. Include written certification that major contractors have reviewed and accepted proposed schedule.

C. Within 10 days after joint review, submit complete schedule.

D. Submit updated schedule with each Application for Payment.

3.4 REQUESTS FOR INFORMATION (RFI)

A. During the Construction Phase the Contractor shall utilize the Request for Information (RFI) process to request clarification or interpretation based on the following criteria:

1. Conflict within the drawings and/or the specifications.
2. Insufficient or unclear information in the drawings or specification.
3. Unanticipated field conditions.
4. Conflict between field conditions and the Contract Documents.
5. If any of the issues above arise and are resolved in the field, they shall be documented through the RFI process.

B. The Contractor shall NOT use the RFI process for the following uses:

1. To change the contract amount or schedule.
2. To authorize work that will change the contract amount or schedule.
3. Request to substitute materials.
4. To propose a change in the contract amount or schedule.
5. To request information readily available in the Contract Documents.

C. Requests for Information (RFI) shall contain the following elements:

1. Project name and location.
2. Primary respondent and secondary respondents if applicable.
3. Date of issue and allow space for revision dates.
4. Name and Company of author.
5. RFI Number (sequential).
6. Subject: provide adequate detail (e.g. "Entry Door at Unit 255").
7. Required Date of Response.
8. Reference specific drawings/details and specific specification sections/paragraphs.
9. Description of conflict or information needed.
10. Author's recommended course of action.
11. Potential for Cost or Schedule Impact:
    a. Include construction status of affected area and photo if applicable.
    b. Indicate if involved materials are on site or have been ordered.
    c. Indicate if recommended course of action will require demolition, cutting and patching, etc.
12. Author's attached documents if applicable.
13. Space for respondent’s response.
14. Space to note respondent’s attached documents.

D. The Contractor shall maintain a log of RFI's that notes the following (this may be integrated into web-based construction administration document control if applicable). The log shall include:

1. Number.
2. Subject.
3. Author.
4. In Whose Court.
5. Date of Issue.
6. Date Due.
7. Date of closure.

E. Upon the request of the Owner, the Contractor shall be prepared to utilize web-based construction administration document control for the RFI process.

F. RFI's shall be submitted digitally via web-based construction administration software if applicable.

3.5 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Web-Based Project Management Software Package: Use Owner-provided, web-based Project management software package for purposes of hosting and managing Project communication and documentation until Final Completion.

B. Portable Document Format (PDF) File Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:

1. 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.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

3.6 COORDINATION DRAWINGS

A. Contractor shall be responsible for the preparation of coordination drawings as warranted by the Work.

3.7 COORDINATION MEETINGS

A. The Contractor shall facilitate coordination meetings between the Contractor, Sub- contractors and the Design Team.

B. The Contractor shall prepare an agenda for each coordination session and prepare meeting minutes recording attendees, decisions made, and action items.

C. The Contractor shall distribute the minutes electronically within two working days.

END OF SECTION

SECTION 01 32 16 - CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Preliminary schedule.
2. Construction progress schedule, bar chart type.

1.3 REFERENCES

A. AGC (CPSM) - Construction Planning and Scheduling Manual; Associated General Contractors of America; 2004.

B. M-H (CPM) - CPM in Construction Management - Project Management with CPM, O'Brien, McGraw-Hill Book Company; 2006.

1.4 SUBMITTALS

A. Within 10 days after date of Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

1.5 QUALITY ASSURANCE

A. Scheduler: Contractor's personnel or specialist Consultant specializing in CPM scheduling with one (1) year minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.

1.6 SCHEDULE FORMAT

A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.

B. Sheet Size: Multiples of 8-1/2 x 11 inches.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 PRELIMINARY SCHEDULE

A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.2 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

B. Identify each item by specification section number.

C. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

D. Indicate delivery dates for owner-furnished products.

E. Provide legend for symbols and abbreviations used.

3.3 BAR CHARTS

A. Include a separate bar for each major portion of Work or operation.

B. Identify the first workday of each week.

3.4 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of schedule with Architect at each submittal.

B. Evaluate project status to determine work behind schedule and work ahead of schedule.

C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.5 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity.

C. Annotate diagrams to graphically depict current status of Work.

D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

E. Indicate changes required to maintain Date of Substantial Completion.

F. Submit reports required to support recommended changes.

3.6 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to Contractor's project site file, to Subcontractors, suppliers, Architect, Owner, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION

SECTION 01 33 00 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Submittal Procedures.
2. Submittals Schedule.
3. Proposed Products List.
4. Shop Drawings.
5. Samples.
6. Manufacturer's Instructions.
7. Manufacturer's Certificates.
8. Manufacturer's Field Report.
9. Construction Photographs.

B. Related Requirements:

1. Section 01 60 00 “Product Requirements”.
2. Section 01 78 00 “Closeout Submittals”.

1.3 SUBMITTAL PROCEDURES

A. Assign each submittal a submittal number comprised of a sequential numerical number, the CSI Specification Section number and number of the specific submission. Subsequent resubmissions are followed by sequential numeric suffix. Example: 5- 088000-1-2 = Fifth submittal overall, the first submittal of Section 08 80 00, second re- submittal.

B. All submittals that are submitted digitally shall be accompanied by a digital transmittal.

C. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and Specification Section number, as appropriate.

D. Contractor's Review:

1. the Contractor shall perform a thorough review of the initial submittal and any subsequent resubmittals for completeness of all required information. This will include but will not be limited to; needed dimensions, material designations, finish choices, coordination with other work, coordination with related Change Orders (CO), Architect's Supplemental Instructions (ASI), and Requests For Information (RFI), warranties, tests, and certifications.
2. Once a thorough review by the Contractor is complete, the Contract shall affix their marked and initialed stamp according to the findings of their review.
3. If the submittal does not have sufficient information, is incomplete, or is sufficiently incorrect to warrant a resubmittal, the Contractor shall return the submittal directly to the sub-contractor for corrections.

4. The Contractor shall only pass complete and thoroughly reviewed and stamped submittals on to the Architect. Any submittal that is incomplete or not thoroughly reviewed and stamped by the Contractor shall be returned un-reviewed.

E. Schedule submittals to expedite Project, and deliver to Architect and Owner. Coordinate submission of related items.

F. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.

G. Provide space for Contractor and Architect review stamps.

H. Revise and resubmit submittals as required, identify all changes made since previous submittal.

I. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

J. The Contractor shall maintain a log of Submittals. (this may be integrated into web- based construction administration document control if applicable). The log shall include:

1. Number of Submittal.
2. Subject.
3. Reviewer(s).
4. Date of Issue.
5. Date Due.
6. Date Returned by Reviewer.

1.4 SUBMITTALS SCHEDULE

A. General: After development and acceptance of fully developed Construction Schedule, prepare complete schedule of work-related submittals. This schedule shall include deferred submittals. Submit this Submittals Schedule, correlated with listing of principal Subcontractors, as required by General Conditions, and with "listing of products" or "procurement schedule" as specified in "Products and Substitutions" paragraphs of Section 01 60 00 “Product Requirements” and elsewhere in Contract Documents.

B. Form: Prepare Submittals Schedule in chronological order of submittals. Indicate following:

1. Category of submittal (review or records).
2. Note clearly if submittal is for deferred permitting.
3. Name of Subcontractor.
4. Generic description of Work covered.
5. Related Section numbers.
6. Activity or event number on Construction Schedule.
7. Scheduled date for first submittal.
8. Re-submittal and final release or approval by Architect.

1.5 PROPOSED PRODUCTS LIST (SUBMITTAL FOR REVIEW)

A. Within thirty (30) days after date of Notice to Proceed, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.6 SHOP DRAWINGS (SUBMITTAL FOR REVIEW)

A. Shop Drawings:

1. Include dimensions, identification of specific products and materials which are included in Work, compliance with specified standard and notations of coordination requirements with other work.

2. Provide special notation of dimensions established by field measurement.

3. High-light, encircle or otherwise indicate deviations from Contract Documents on Shop Drawings.

4. Clearly note on drawing if this a deferred permit submittal. If it is, include the project building permit number and provide space on the sheet for comments and approval stamps from the building department.

B. Shop Drawings Procedure:

1. Contractor shall submit, after Contractor's review, one digital copy in PDF format to Architect. If the Contractor has not reviewed and stamped the shop drawings prior to submitting to the Architect; they shall be deemed unacceptable and not reviewed by the Architect.

2. When shop drawings require review by multiple parties, Contractor shall distribute for simultaneous review in the same digital format.

3. Contractor shall make all corrections, including all necessary corrections relating to artistic effect, required by Architect, and then print and distribute copies to respective trades, Owner and Architect.

C. Shop Drawing Step Summary:

1. Contractor reviews and stamps prints.

2. Contractor sends Architect one digital copy and other reviewers 1 digital copy when required.

3. Architect reviews, notes and returns marked up digital copy to Contractor.

4. Contractor makes necessary corrections.

5. Contractor prints accepted final mark up and distributes 1 digital copy to each reviewer. Refer also to Section 01 78 00 “Closeout Submittals” for Record Drawings.

D. Architect Review of such Drawings or schedules shall not relieve Contractor from responsibility for deviations from Drawings or specifications unless Contractor had, in writing, called Architect's attention to such deviation at time of submission, nor shall it relieve Contractor from responsibility for errors of any sort in Shop Drawings or schedules.

1.7 PRODUCT DATA (SUBMITTAL FOR REVIEW)

A. Submit 1 digital copy in PDF format via e-mail.

B. Mark submittal to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to this Project.

C. Architect's or Consultant's reviews and review stamps may be applied digitally and reviews submittals returned to Contractor digitally.

D. After review, distribute in accordance with Article on Procedures above and provide copies for Record Documents described in Section 01 78 00 “Closeout Submittals” for O&M Manuals.

1.8 SAMPLES (SUBMITTAL FOR REVIEW)

A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

B. Submit samples of finishes from full range of manufacturer's standard colors, textures, and patterns for Architect's selection.

C. Include identification on each sample, with full Project information.

D. Submit number of samples specified in individual Specifications Sections; one of which will be retained by Architect. When there are two architectural firms involved, provide a minimum of one sample for each plus additional samples as required.

E. Reviewed samples which may be used in Work are indicated in individual Specification Sections.

1.9 MANUFACTURER'S INSTRUCTIONS (SUBMITTAL FOR RECORDS)

A. When specified in individual specification Sections, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting and finishing. Submit 1 digital copy in PDF format via e-mail for Architect's and consultant's records.

B. Identify conflicts between manufacturer's instructions and Contract Documents.

1.10 MANUFACTURER'S CERTIFICATES (SUBMITTAL FOR RECORDS)

A. When specified in individual Specification Sections, submit manufacturer's certificate to Architect/Engineer for review. Submit 1 digital copy in PDF format via e-mail for Architect's and consultant's records

B. Indicate material or product conforms to or exceeds specific requirements. Submit supporting reference date, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect/Engineer.

1.11 MANUFACTURER'S FIELD REPORT (SUBMITTAL FOR RECORDS)

A. When specified in individual Specification Sections, submit Manufacturer's Field Report to Architect for review. Submit 1 digital copy in PDF format via e-mail for Architect's and Consultant's records.

B. Manufacturer's Field Report shall include the name and company of the Manufacturer's Representative, time and date of the site visit, weather conditions, progress point of the work, overview of the site visit scope, any deficiencies noted and remedial instructions given to Contractor including any instructions given that are contradictory to manufacturer's written instructions.

1.12 CONSTRUCTION PHOTOGRAPHS (SUBMITTAL FOR RECORDS)

A. Provide photographs of site and construction throughout progress of Work produced by an experienced photographer, acceptable by Architect.

B. Take photographs each month.

C. Views:

1. Provide non-aerial photographs from four cardinal views at each specified time, until Date of Substantial Completion.

D. Images: Full Color

1. Identify each view in lower right hand corner or bottom edge. Identify name of Project, contract number, phase, orientation of view, date (include in digital file name) and time of view.

2. Distribute submittals digitally in PDF or JPEG format.

1.13 CONTRACTOR PLANS (SUBMITTAL FOR REVIEW/RECORDS)

A. Submit all Plans in digital pdf format via email.

B. Contractor Quality Control Plan.

C. Contractor's Waste Management Plan and related reports.

D. Contractors Indoor Air Quality Plan and related reports.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 SUBMITTAL REVIEW TIME ALLOCATION

	Architects First Review	Contractor's Revision as Required	Architects Second Review
Shop Drawings Simple Review	10 Working Days	5 Working Days	5 Working Days
Shop Drawings Multiple Review	20 Working Days	10 Working Days	10 Working Days
Product Data	10 Working Days	5 Working Days	5 Working Days
Samples	10 Working Days	5 Working Days	5 Working Days

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. References and standards.
2. Control of installation.
3. Tolerances.
4. Manufacturer's field services.

B. Related Requirements:

1. Section 01 33 00 “Submittals”: Submittal procedures.
2. Section 01 60 00 “Product Requirements”: Requirements for material and product quality.

1.3 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

D. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 TESTING AND INSPECTION AGENCIES

A. Clackamas Community College will employ and pay for services of an independent testing agency to perform specified testing.

B. Contractor shall cooperate in full with Owner's retained testing agency to facilitate the fulfillment of their duties

C. Contractor will pay for additional retesting until compliance with requirements is achieved.

D. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have Work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.3 TESTING AND INSPECTION

A. See individual specification sections for testing required.

B. Owner shall retain and pay Inspection and Testing company except as otherwise noted

C. Contractor Responsibilities:

1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.

2. Cooperate with laboratory personnel and provide access to the Work and to manufacturers' facilities.

3. Provide incidental labor and facilities:

a. To provide access to Work to be tested/inspected.

b. To obtain and handle samples at the site or at source of Products to be tested/inspected.

c. To facilitate tests/inspections.

d. To provide storage and curing of test samples.

4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.

5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

6. Arrange with Clackamas Community College's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

D. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.

E. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor by a deductive Change Order.

3.4 MANUFACTURER'S FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, as applicable, and to initiate instructions when necessary.

B. Manufacturer's representative shall have expertise and authority to review work and approve completed work relative to warranty requirements.

C. Submit Manufacturer's certification of observer's authority to review work for warranty compliance to Architect with first field report.

D. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions. Refer to Section 01 33 00 “Submittals” for additional field report requirements.

3.5 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not conforming to specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Owner will direct an appropriate remedy or adjust payment.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 01 42 19 - REFERENCE STANDARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Referenced standards.

1.3 QUALITY ASSURANCE

A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.

C. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Architect shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

1.4 ORGANIZATION AND AGENCY ABBREVIATIONS AND ACRONYMS

A. Refer to specification sections for applicable abbreviations and acronyms for industry organizations and federal, state and local agency requirements, standards and regulatory organizations.

B. Construction Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

C. United States Government and Related Agencies Abbreviations: Where occurs; see individual sections.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 01 45 17 - ACCESSIBILITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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. Section Includes:

1. General requirements and procedures for compliance with Federal Regulation guidelines and applicable State and local Codes.

B. Related Requirements:

1. Section 06 41 00 “Architectural Casework” for clearances, heights and reach.
2. Section 08 71 00 “Door Hardware” for heights and operation.
3. Section 10 14 00 “Signage” for locations and legibility.
4. Section 10 28 00 “Restroom Accessories.”

1.3 REFERENCES

A. American National Standard Institute and International Code Council (ICC):

1. ICC A117.1 - Standard for Accessible and Usable Buildings and Facilities

B. State of Oregon, Building Codes Division:

1. Oregon Structural Specialty Code (2014).

C. U.S. Architectural & Transportation Barriers Compliance Board:

1. ADA-ABA Accessibility Guidelines for Buildings and Facilities

D. U.S. Department of Justice and United States Access Board:

1. ADA Accessibility Guidelines (ADAAG).
2. ADA Standards for Accessible Design (2010).

E. PCC 2020 Design and Constructions Standards : “Accessibility Standards”.

1.4 REGULATORY REQUIREMENTS

A. Comply with applicable provisions in the Oregon Structural Specialty Code (2014) and the References cited in this section.

1.5 DEFINITIONS

A. General: Definitions here relate to accessibility issues, and do not replace nor supersede similar definitions elsewhere in the documents pertaining to other issues.

B. Maximum (max.):

1. Distance or Dimension: The largest measure of distance or largest dimension allowable; shall account for all construction tolerances of various trades involved; shall account for additions or reductions in distance or dimension due to finish materials.
2. Force: The largest measure of or force allowable.

C. Minimum (min.):

1. Distance or Dimension: The least measure of distance or least dimension allowable; shall account for all construction tolerances of various trades involved; shall account for additions or reductions in distance or dimension due to finish materials.

D. On-Center (o.c.): Equidistant measure from the centerline or midpoint of a fixture to that of the next similar fixture.

E. Centerline: Line that bisects a fixture or piece of equipment, about which the distance or dimension to adjacent surfaces is equidistant.

1.6 SUBMITTALS

A. Refer to requirements of Sections indicated in this section.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Installers of fixtures and equipment with accessibility requirements shall be familiar with the guidelines and Code requirements in effect within the jurisdiction the Project is located in, and shall be experienced in coordination with other trades providing adjacent work and finishes to ensure awareness of tolerances required and compliance with guidelines and Code requirements.

B. Reviewer Qualifications: Qualified agency shall be familiar with the guidelines and Code requirements in effect within the jurisdiction the Project is located in. The agency shall be experienced in coordination requirements of trades providing adjacent work and finishes. The agency shall be familiar with the tolerances required of adjacent work for compliance with guidelines and Code requirements.

PART 2 - PRODUCTS

2.1 SIGNAGE

A. Related Requirements: Coordinate requirements with the following Sections:

1. Section 10 14 00 “Signage.”

B. Schedule of Accessibility Signage:

1. Exit Signage:

a. Tactile and Braille EXIT signs are to be provided at the emergency exits.

b. Federal Regulation: 703.4.1

PART 3 - EXECUTION

3.1 GENERAL

A. Responsibility: It is the responsibility of trades involved in work at all elements and fixtures for which accessibility guidelines and Code regulations are required to coordinate for the proper positioning and location to meet accessibility requirements.

B. Requirements below are provided for the provision and installation of building and site elements for which accessibility requirements are often compromised by dimensional inconsistencies and mis-location due to thickness and dimensional tolerances of adjacent finishes.

3.2 SITE ELEMENTS

A. Related Requirements: Coordinate site elements requirements with the following Sections:

1. Section 03 30 30 “Cast-in-Place Concrete.”

B. Schedule of Accessibility Site Elements:

1. Curb Ramp, Exterior:

a. State Regulation: ANSI 406.13.

2. Walkway, Exterior

a. Cross slope of paved paths shall be 2.0 percent maximum slope.

b. Federal Regulation: 403.3.

3.3 BUILDING ELEMENTS

A. Schedule of Accessibility Building Elements:

1. Door Closer:

a. Door Closer Sweep Time: 5 seconds minimum.

b. Door Opening Force: 5 lbs maximum.

c. State Regulation: 1101.2.2.5.

d. Federal Regulation: 404.2.8.1, 404.2.9.

2. Panic Door Hardware:

a. Operational Force: 5 lbs maximum.

b. Federal Regulation: 309.4.

3. Countertops.

a. Federal Regulation: 904.4.1.

4. Electrical Devices:

a. Federal Regulation: 308.3, 308.3.1.

5. Door Handles:

a. Single-User (Unisex) Restroom Compartment Doors: doors in single-user rooms shall be provided with handles on both sides of the door.

b. Federal Regulation: 604.8.1.2.

6. Grab Bars:

a. Federal Regulation: 609.4.

7. Dispensers:

a. Federal Regulation: 604.7.

b. Federal Regulation: 604.5.2, 609.3.

8. Toilet Stall Partitions:

a. Federal Regulation: 604.3.1.

9. Urinals:

a. Federal Regulation: 605.2.

10. Multiple User Restrooms:
    a. Lavatories:
        1) Federal Regulation: 306.3, 306.3.3, 606.3.
    b. Toilets:
        1) Federal Regulation: 604.4.
11. Kitchens, Kitchenettes and Coffee/ Break Areas:
    a. Federal Regulation: 804.3.2.
12. Accessible Seating:
    a. Accessible seating shall be provided for at least 5 percent of seating or standing spaces; there shall be no less than one accessible seat provided.
    b. State Regulation: 1108.2.9.1.
13. Drinking Fountains
    a. Provide as a minimum the number of drinking fountains required by the regulations:
        1) Federal Regulation: 211.2, 601.2 - 602.7.
    b. Provide a high and low fountain at each location.
        1) Federal Regulation: 211.2, 601.2 - 602.7.

3.4 PATH OF TRAVEL

1. Common Path: Provide minimum clearances.
    a. State: 307.2.
    b. Federal: 307.
2. Urinal Path:
    a. Federal Regulation: 403.5.2.

3.5 MEASUREMENT AND VERIFICATION

A. Contractor shall provide oversight and to perform measurements and inspections of fixtures and equipment installed for assurance of compliance with guidelines and Code requirements prior to inspection by the Jurisdiction.

END OF SECTION

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Temporary telephone service.
2. Temporary sanitary facilities.
3. Temporary Controls: Barriers, enclosures, and fencing.
4. Security requirements.
5. Vehicular access and parking.
6. Waste removal facilities and services.
7. Project identification sign.
8. Field offices.

1.3 COMMUNICATIONS SERVICES

A. Provide, maintain and pay for telephone and internet services to field office at time of project mobilization.

1.4 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

1.5 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.6 FENCING

A. Provide 6 foot high fence around construction site where required by Owner; equip with vehicular and pedestrian gates with locks.

1.7 EXTERIOR ENCLOSURES

A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

B. Provide temporary weather tight enclosures for site storage of weather-sensitive products and items, where required by Owner.

1. Enclosures shall accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access openings with locks.

1.8 SECURITY

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft. Scope of required security measures to be determined by Owner and Contractor during bidding.

1.9 VEHICULAR ACCESS AND PARKING

A. Coordinate access and haul routes with governing authorities and Owner.

B. Provide and maintain access to fire hydrants, free of obstructions.

C. Provide means of removing mud from vehicle wheels before entering streets.

D. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.10 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Remove trash from site periodically.

C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.11 PROJECT IDENTIFICATION

A. Provide Project identification signage where required by Owner.

B. Erect on site at location indicated.

C. No other signs are allowed without Owner permission except those required by law.

1.12 FIELD OFFICES

A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack and drawing display table.

B. Provide space for Project meetings.

C. Locate Field Offices within or nearby the Project site.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 01 57 22 - CONSTRUCTION INDOOR AIR QUALITY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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 describes Construction Indoor Air Quality (IAQ) goals and includes administrative and procedural requirements for the development and execution of a construction air quality management plan.

B. Related Sections include the following:

1. Section 01 60 00 “Product Requirements” procedures for storage of interior materials to prevent exposure to moisture and pollutants.

2. Division 23 “HVAC” for duct cleaning procedures.

1.3 INDOOR AIR QUALITY MANAGEMENT

A. The Owner has established that the contractor shall prevent indoor air quality problems resulting from the construction process, to sustain long term installer and occupant health and comfort.

B. Protect the ventilation system components during construction and clean contaminated components after construction is complete.

C. Control sources of potential IAQ pollutants by controlling selection of materials and processes used in project construction.

1.4 SUBMITTALS

A. IAQ Management Plan for the construction and pre-occupancy phases of the project.

B. Photographs documenting construction IAQ management measures implemented during construction such as duct protection measures and measures to protect on-site stored or installed absorptive materials from moisture.

C. Cut sheets of filtration media used during construction with MERV values highlighted.

1.5 CONSTRUCTION AIR QUALITY MANAGEMENT PLAN

A. Develop a Draft Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:

1. During construction meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).

2. Protect stored on-site or installed absorptive materials from moisture damage.

B. The SMACNA IAQ Guidelines for Occupied Buildings under Construction provides an overview of air pollution associated with construction, control measures, construction process management, quality control, communicating with occupants, and case studies. These guidelines can be accessed at www.smacna.org. Chapter 3 of the SMACNA Guidelines recommends Control Measures in five areas: HVAC protection, source control, pathway interruption,

housekeeping, and scheduling. Review the applicability of each Control Measure and include those that apply in the Draft IAQ Management Plan.

1. HVAC Protection: Shut down the return side of the HVAC system whenever possible during heavy construction. If the system must remain operational during construction include the following strategies that apply:
    a. Fit the return side of the HVAC system with temporary filters with a Minimum Efficiency Reporting Value (MERV) of 8.
    b. Isolate the return side of the HVAC system from the surrounding environment as much as possible (e.g., place all tiles for the ceiling plenum, repair all ducts and air handler leaks).
    c. Damper off the return system in the heaviest work areas and seal the return system openings with plastic.
    d. Upgrade the filter efficiency where major loading is expected to affect operating HVAC system.
    e. Clean permanent return air ductwork per National Air Duct Cleaning Association standards upon completion of all construction and finish installation work.
    f. Replace all filtration media prior to occupancy.
3. Source Control: Propose the substitution of non-toxic formulations of materials that are generally the responsibility of the contractor such as caulks, sealants, and cleaning products.
4. Pathway Interruption: Prevent contamination of clean spaces. Include the following strategies that apply:
    a. Use 100% outside air ventilation (when outside temperatures are between 55 degrees F and 85 degrees F and humidity is between 30% and 60%) with air exhausted directly to the outside during installation of finishes and other VOC emitting materials.
    b. Erect some type of barrier between work areas or between the inside and outside of the building to prevent unwanted airflow from dirty to clean areas.
5. Housekeeping: Reduce construction contamination in the building prior to occupancy through HVAC and regular space cleaning activities.
    a. Store building materials in a weather tight, clean area prior to unpacking for installation.
    b. Check for possible damage to building materials from high humidity.
    c. Clean all coils, air filters, and fans before testing and balancing procedures are performed.
6. Scheduling: Specify construction sequencing to reduce absorption of VOC's by materials that act as sinks or contaminant sources. Complete application of wet and odor-emitting materials such as paints, sealants, and coatings before installing sink materials such as ceiling tiles, carpets, insulation, gypsum products, and fabric-covered furnishings are installed.
    d. Protect stored on-site or installed absorptive materials from exposure to moisture through precipitation, plumbing leaks, or condensation from the HVAC system to prevent microbial contamination.

C. Draft IAQ Management Plan Review Meeting: Once the Owner and Architect have reviewed the Draft IAQ Management Plan and prior to construction at the site, schedule and conduct a meeting to review the Draft IAQ Management Plan and discuss procedures, schedules and specific

requirements for IAQ during the construction and pre-construction phases of the building. Discuss coordination and interface between the Contractor and other construction activities. Identify and resolve problems with compliance to the requirements. Record minutes of the meeting, identify all conclusions reached and matters requiring further resolution.

1. Attendees: The Contractor and related Contractor personnel associated with the work of this section, including personnel to be in charge of the IAQ management program, Architect, Owner and such additional personnel as the Architect or Owner deem appropriate.

D. Final IAQ Management Plan: Make any revisions to the Draft IAQ Management Plan agreed upon during the meeting identified in item (C) above and incorporate resolutions agreed to be made subsequent to the meeting. Submit the revised plan to the Owner and Architect for approval within 10 calendar days of the meeting.

PART 2 - PRODUCTS

- NOT USED -

PART 3 - EXECUTION

3.1 IMPLEMENTATION OF IAQ MANAGEMENT PLAN

A. Manager: The Contractor shall designate an on-site party (or parties) responsible for instructing workers and overseeing and the IAQ Management Plan for the Project.

B. Progress Meetings: Construction related IAQ procedures shall be included in the pre-construction and construction progress meeting agendas.

C. Distribution: The Contractor shall distribute copies of the IAQ Management Plan to the Job Site Foreman, each Subcontractor, the Owner, and the Architect.

D. Instruction: The Contractor shall provide on-site instruction of the IAQ procedures and ensure that all participants in the construction process understand the importance of the goals of the IAQ Management Plan.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Definitions.
2. Products.
3. Transportation and Handling.
4. Storage and Protection.
5. Substitutions.
6. Quality Assurance.
7. Installation of Products.

B. Related Requirements:

1. 01 74 19 “Construction Waste Management”: Disposal/Recycling of product packaging and shipping materials.

1.3 DEFINITIONS

A. Definitions used in this section are not intended to negate meaning of other terms used in Contract Documents, including such terms as "specialties", "systems", "structure", "finished", "accessories", "furnishings", "special construction", and similar terms. Such terms are self-explanatory and have recognized meanings in construction industry:

1. "Products" are items purchased for incorporation in Work, regardless of whether they were specifically purchased for Project or taken from Contractor's previously purchased stock. "Product", as used herein, includes "material", "equipment", "system" and other terms of similar intent.
2. "Named products" are products identified by use of manufacturer's name for product, including such items as make or model designation, as recorded in published product literature, of latest issue as of date of Contract Documents.
3. "Materials" are products that must be substantially cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed or installed to form units of Work.
4. "Equipment" is defined as product with operational parts, regardless of whether motorized or manually operated, and in particular, product that requires service connections such as wiring or piping.

1.4 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. products may also include existing materials or components required for reuse.

B. Contractor's options in select products are limited by requirements of Contract Documents and governing regulations. They are not controlled by industry traditions or procedures experienced by Contractor on previous construction projects. Required procedures include, but are not limited to the following for various indicated methods of specifying:

1. Proprietary and semi-proprietary specification requirements:

a. Single Product Name: Where only single product or manufacturer is named provide product indicated, unless Specification indicates possible consideration of other products.

b. Two or more product names: Where two or more products or manufacturers are named, provide one of products named, at Contractor's option. Exclude products that do not comply with Specifications requirements. Do not provide or offer to provide unnamed products, unless Specifications indicate possible consideration of other products.

c. Where products or manufacturers are specified by name, accompanied by term "or approved", comply with Contract Documents provisions concerning "substitutions" to obtain approval from Architect for use of unnamed product.

2. Non-proprietary Specifications Requirements: Where Specifications name products or manufacturers that are available and may be incorporated in Work, but do not restrict Contractor to use of these products only, Contractor may, at the Contractor's option, use any available product that complies with Contract requirements. Comply with substitution requirements article 1.08 of this Section.

3. Descriptive Specifications Requirements: Where Specifications describe product or assembly generically, in detail, listing exact characteristics required, but without use of brand or trade name, provide products or assemblies that provide characteristics indicated and otherwise comply with Contract requirements.

4. Performance Specification Requirements: Where Specifications require compliance with indicated performance requirements, provide products that comply with indicated performance requirements, and are recommended by manufacturer for indicated application. Manufacturer's recommendations may be contained in published product literature or by manufacturer's individual certification of performance. General overall performance of product is implied where product is specified for specific performance.

5. Compliance with Standards, Codes and Regulations: Where Specifications require compliance with imposed standard, code or regulation, Contractor has option of selecting product that complies with Specifications requirements, including standards, codes and regulations.

6. Visual Matching: Where matching established sample is required, final judgement of whether product proposed by Contractor matches sample satisfactorily will be determined by Architect. Where there is no product available within specified product category that matches sample satisfactorily and also complies with other specified requirements, comply with provisions of Contract Documents concerning “substitutions" and "change orders" for selection of matching products in another product category or for non-compliance with specified requirements.

7. Visual Selection: Except as otherwise indicated, where specified product requirements include phrase "as selected from manufacturer's standard colors, patterns, textures" or similar phrases, Contractor has option of selecting product and manufacturer, provided selection complies with other specified requirements. Architect is subsequently responsible for selecting color, pattern and texture from product line selected by Contractor.

C. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.

D. Provide interchangeable components of the same manufacturer, for similar components.

E. General Product Requirements:

1. Provide products that comply with requirements of Contract Documents and that are undamaged and, unless otherwise indicated, unused at time of installation. Provide products that are complete with all accessories, trim, finish, safety guards and other devices and details needed for complete installation and for intended use and effect.

2. Where they are available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Where, because of nature of its application, Owner is likely to need replacement or additional amounts of product at later date, either for maintenance and repair, or replacement, provide standard, domestically produced products for which manufacturer has published assurances that products and parts are likely to be available to Owner at later date.

4. Except as otherwise indicated for required labels and operating data, do not permanently attach or imprint manufacturer's or producer's name plates or trademarks on exposed surfaces of products which will be exposed to view either in occupied spaces or on exterior of completed project.

5. Locate required product labels and stamps on concealed surface or, where required for observation after installation, on accessible surface which, in occupied spaces, is not conspicuous.

6. Provide permanent engraved metal or laminated nameplate each item of service-connected, power-operated equipment or electrical outlet. Locate nameplate on easily accessible surface which is inconspicuous in occupied spaces. Nameplate shall contain following information and other essential operating data:

a. Name of manufacturer.

b. Name of product.

c. Model number.

d. Serial number.

e. Capacity.

f. Speed.

g. Rating.

7. For power outlets, verify information with Owner's representative.

1.5 TRANSPORTATION AND HANDLING

A. Deliver, handle and store products in accordance with manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft. Control delivery schedules to minimize long-term storage at Site and to prevent overcrowding of construction areas. In particular, coordinate delivery and installation to ensure minimum or storage times for items known or recognized to be flammable, hazardous, easily damaged, valuable or sensitive to theft, deterioration or other source of loss.

B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.6 STORAGE AND PROTECTION

A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.

B. For exterior storage of fabricated products, place on sloped supports, above ground.

C. Provide off-site storage and protection when site does not permit on-site storage or protection. Coordinate off-site storage with PCC Project Manager if said materials are to be included in Applications for Payment.

D. Store heavy materials in manner that will not endanger supporting structure.

E. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.

F. Store loose granular materials on solid flat surfaces in a well-drained area. Provide mixing with foreign matter.

G. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement or damage.

H. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

1.7 PACKING MATERIALS AND DUNNAGE

A. Coordinate recycling and disposal of packing materials, product packaging, and dunnage with project Waste Management Plan.

1.8 SUBSTITUTIONS

A. Contractor's requests for changes in products, materials, equipment and methods of construction required by Contract Documents are considered requests for "substitutions", and are subject to requirements specified herein. Following are not considered as substitutions:

1. Revisions to Contract Documents, where requested by Owner or Architect are considered as "changes" not substitutions.

2. Substitutions requested during bidding period, which have been accepted prior to Contract Date, are included in Contract Documents and are not subject to requirements for substitutions as herein specified.

3. Specified Contractor options on products and construction methods included in Contract Documents are choices available to Contractor and are not subject to requirements for substitutions as herein specified.

4. Except as otherwise provided in Contract Documents, Contractor's determination of and compliance with governing regulations and orders as issued by governing authorities do not constitute "substitutions" and therefore do not justify basis for change orders.

B. Identified interior finishes or material MAY BE specified as sole source manufacturer in order to comply with the owners finish plan. Substitutions for these specified manufacturer products will not be considered.

C. Substitution Requests:

1. Submit Substitution Requests to the General Contractor. The General Contractor will the review the request against the Contract Document requirements and forward them to the Architect for action. Requests made directly to Architect or Engineer will not be reviewed.

2. Architect will consider written requests for substitutions received no later than 5 working days prior to Bid Date. Requests received after that time will not be considered.

3. After date of Contract, Architect may consider normal requests from Contractor for substitution of products in place of those specified when submitted in accord with requirements of this section. One or more of following conditions must also be documented:

    a. Substitution must be required for compliance with final interpretation of Code requirements or insurance regulations.

    b. Substitution must be due to unavailability of specified products, through no fault of Contractor.

    c. Substitution may be requested when subsequent information discloses inability of specified products to perform properly or to fit in designated locations.

    d. Substitution may be due to manufacturer's or fabricator's refusal to certify or guarantee performance of specified product as intended or required.

    e. Substitution may be requested when, in judgement of Owner, substitution would be in Owner's best interest in terms of cost, time or other considerations.

4. Submit Request for Substitution in PDF Format via e-mail. Use enclosed Substitution Request Form for all requests. Include in request following information:

    a. Complete data substantiating compliance of proposed substitution with Contract Documents, including following information:

        1) Product identification, including manufacturer name and address.

        2) Manufacturer's literature, including product description, performance and test data and reference standards.

        3) Samples.

        4) Name and address of similar projects or installations including description of product, installation conditions and date of installation.

    b. Itemized comparison of proposed substitution with product or method specified.

    c. Data relating to changes in construction schedule anticipated as result of implementation of substitution.

    d. When requests are submitted after Bid, submit accurate cost data on proposed substitution in comparison with product or method specified.

5. In making Request for Substitutions, Manufacturer or Contractor is hereby certifying the following:

    a. Product has been personally investigated and determined to be equal or superior in all aspects to specified item.

    b. Same guarantee for specified item will be provided for substitution.

    c. Coordination will be provided to install accepted substitutions in Work, including any necessary changes in other work required for acceptance of item.

    d. All claims for any added cost or time relating to substitution which may become apparent will be waived.

    e. Cost data is complete and includes all related costs under this Contract, but excludes costs under separate contracts or Owner re-design, including Consulting fees.

D. Substitutions will only be considered when:

1. Request for Substitution is submitted in accordance with requirements of this Section.

2. Acceptance of substitution will not require extensive revisions of Contract Documents.

3. Substitutions will NOT be considered when they are submitted as product data or shop drawing submittals.

1.9 QUALITY ASSURANCE

A. Source Limitations:

1. To fullest extent possible, provide products of same generic kind, from single source, for each unit of work.

2. If it is discovered that specified products are available only from sources that do not or cannot adequate quantity to complete project requirements in timely manner, consult with Architect for determination of what product qualities are most important before proceeding. Architect will designate those qualities, such as visual, structural, durability, or compatibility that are most important. When Architect's determination has been made, select products from those sources that possess most important qualities to fullest extent possible.

B. Compatibility Options:

1. Compatibility of products is basic requirement of product selection. When Contractor is given option of selecting between two or more products for use on Project, product selected must be compatible with other products previously selected, even if products previously selected were also Contractor options. Complete compatibility between various choices available to Contractor is not assumed by various requirements of Contract Documents, but must be provided by Contractor.

1.10 INSTALLATION OF PRODUCTS

A. Except as otherwise indicated in individual sections of these Specifications, comply with manufacturer's instructions and recommendations for installation of products in applications indicated.

B. Anchor each product securely in place, accurately located and aligned with other Work.

C. Clean exposed surfaces and protect surfaces as necessary to ensure freedom from damage and deterioration at time of acceptance.

PART 2 - PRODUCTS

- NOT USED -

PART 3 - EXECUTION

- NOT USED -

END OF SECTION

SECTION 01 61 16 - DELEGATED DESIGN REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. General: This Section specifies administrative and procedural requirements for delegated design indicated in the various Sections of these Specifications.

B. Section Includes:

1. Structural and other design requirements for delegated design components, otherwise known as fabricator-designed, bidder-designed or bidder design-build components.

C. This Section applies to Technical Specification Sections, and supplements requirements indicated in the General and Supplementary Conditions.

D. Delegated design does not mean deferred submittal. See Drawings for deferred submittals.

E. Related Requirements: Refer to sections indicated for specific delegated design requirements, including, but not limited to the following:

1. Section 09 51 13 “Acoustical Panel Ceilings”.

2. Section 10 22 39 “Folding Panel Partitions”.

1.3 DEFINITIONS

A. Contractor Design Requirements: Where occurs, same meaning as Delegated Design Requirements.

B. Delegated Design Work: Design services and certifications provided by a Professional Engineer registered as such in the State where the Project is located related to systems, materials or equipment required for the Work to satisfy design and performance criteria established by the Contract Documents. Delegated Design does not include professional services the Contractor needs to fulfill their responsibilities under the Contract including but not limited to construction means, methods and sequence.

C. Seal: Certification that builder design plans, computations and specifications were designed and prepared under the direct supervision of the Architect or Engineer whose name appears thereon.

D. Approval Stamp: Certification obtained by the Contractor that the Building Official has reviewed a submittal, and finds it acceptable with respect to applicable regulatory requirements.

E. Bidder-Design: Design services provided by an installer or manufacturer complying with quality assurance, performance requirements and design requirements indicated and established by the Contract Documents. Bidder-design does not include Professional Engineering unless indicated otherwise.

1.4 DELEGATED- AND BIDDER-DESIGN SERVICES

A. Where referenced in these specifications, Delegated Design components and their attachments to the structure shall comply with the currently adopted edition of all applicable state and local ordinances, with parameters as specified in this individual sections.

B. Where referenced in these specifications, Bidder-Design components and installation shall comply with the currently adopted edition of all applicable state and local ordinates, with parameters specified in this and individual sections.

C. Permitting Agency Requirements: Follow the requirements for permits current at the time of submission. The General Contractor is responsible to coordinate and submit all material required, so the permitting agency's review will not adversely affect the construction schedule. At or near time of application, the General Contractor shall meet with the permitting agency to identify Delegated Design components and how they are to be submitted and processed for permits.

D. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

1.5 SUBMITTALS

A. General: Submit complete Delegated Design Submittals to meet permitting agency requirements for permits. Include drawings and calculations for that portion of the Work signed and sealed by a State of Oregon registered engineer. Incomplete submittals or submittals not previously reviewed and so stamped by General Contractor will not be accepted for review by the Architect or Engineer of Record.

B. These submittal requirements are in addition to other submittal requirements stated elsewhere in the contract documents.

1.6 QUALITY ASSURANCE

A. Where referenced in these specifications, Delegated Design components and their attachments to the structure shall comply with the currently adopted edition of all applicable state and local ordinances, with parameters as specified in this section.

B. Permitting Agency Requirements: Follow the requirements for permits current at the time of submission. The General Contractor is responsible to coordinate and submit all material required, so the permitting agency's review will not adversely affect the construction schedule. At or near time of application, the General Contractor shall meet with the permitting agency to identify Delegated Design components and how they are to be submitted and processed for permits.

1.7 INSURANCES

A. Refer to General Conditions for Insurance and Bonds.

PART 2 - PRODUCTS

- NOT USED -

PART 3 - EXECUTION

3.1 WORK INCLUDED

A. General: Certain of the components of the Work under this project are Delegated Design. It is the General Contractor's responsibility to coordinate and assume or assign to subcontractors the complete responsibility for the design, calculations, submittals, fabrication, transportation and installation of the Delegated Design portions or components as required in this Section.

B. The General Contractor is responsible to submit all documents required by the permitting agency for the separate approval and permit for each Delegated Design item. Delegated Design

components of this Work are defined as complete, operational systems, provided for their intended use.

C. All permit plan review and permit fees for Delegated Design items are the responsibility of the submitting General Contractor.

3.2 DOCUMENTS REQUIRED

A. General: Delegated Design documents and related permits issuance must be completed prior to fabrication. The General Contractor must complete and submit a Contractor Design Summary Sheet listing Delegated Design Subcontractors and their registered engineer's names and phone numbers prior to submission of the Delegated Design documents for review.

B. Scope of Documents: Delegated Design components are shown in the Contract Documents for design intent. The purpose is to have the General Contractor responsible to provide, coordinate and install each Delegated Design component.

1. Delegated Design components attached to the structural frame or supplemental to the structural frame shall be designed for the anticipated loads as outlined in the Contract Documents. These Delegated Design components are all to be coordinated with appropriate subcontractors.

2. Load reactions at the interface between the Delegated Design components and the structural frame shall be clearly defined to allow for a review by the Architect and Engineer of Record.

C. Component Certification: Certify that mechanical and electrical components comply with the structural provisions of all applicable codes.

1. Shop Drawings: Submit shop drawings for all attachments to the structure for all elements requiring structural design per these specifications. These attachments include, but are not limited to, structural bracing for equipment, conveyances, and architectural components; seismic restraints of vibration isolation systems; and details of lateral bracing and attachment systems designed to accommodate differential movement between building levels.

2. Shop Drawings shall be sealed by the structural engineer responsible for their design.

D. Quality Assurance Plan: Submit a quality assurance plan for the designated structural system of all elements requiring structural design per these specifications. Quality assurance plan shall comply with Owner's requirements and all applicable codes.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 01 70 00 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Submittals for Survey Work and Cutting and Patching Work.
2. Project Conditions.
3. Coordination.
4. Patching Materials.
5. Examination.
6. Preparation.
7. Pre-installation meetings.
8. Field Engineering.
9. Cutting and patching.
10. Starting of systems and equipment.
11. Demonstration and instruction of Clackamas Community College personnel.
12. Closeout procedures.

B. Related Requirements:

1. Section 01 33 00 “Submittals”: Submittals procedures.
2. Section 01 78 00 “Closeout Submittals”: Project record documents, operation and maintenance data, warranties.

1.3 SUBMITTALS

A. Cutting and Patching: Submit written request at least 72 hours in advance of cutting or alteration which affects:

1. Structural integrity of any element of Project.
2. Integrity of weather exposed or moisture resistant element.
3. Efficiency, maintenance, or safety of any operational element.
4. Visual qualities of sight exposed elements.
5. Work of Clackamas Community College or separate Contractor:
    a. Requirements of other procedures such as utility shut-downs notices or coordination with building occupant activities may supersede advance notice time allotment.
    b. Advance notice shall not include holidays and weekends.
6. Include in request:
    a. Identification of Project.

b. List of products and sub-contractors to be utilized.

c. Location and description of affected work.

d. Necessity for cutting or alteration.

e. Description of proposed work and Products to be used.

f. Alternatives to cutting and patching.

g. Effect on work of Clackamas Community College or separate Contractor.

h. Written permission of affected separate Contractor.

i. Where cutting and patching involves any alterations to the integrity of structural systems, submit drawings and engineering calculations, approved by engineer licensed to practice in location of project, that indicate how system will be restored to maintain original integrity.

j. Describe utility interruptions, shut down events and any other coordination effect.

k. Date and time work will be executed.

l. Approval by Architect to proceed with Cutting and Patching Work does not waive Architect's right to later require complete removal and replacement of Work performed in unsatisfactory or deficient manner.

B. Project Closeout Schedule: Prepare a detailed closeout schedule to include the following:

1. Contractor Punch listing and Corrections. Indicated phases if warranted.

2. Architect Punch listing.

3. Final Acceptance Inspection.

4. Certificate of Substantial Completion.

5. O&M Manual submission and review.

6. Final Pay Request.

7. Owner Orientation and Training.

8. Delivery of Warranties and Bonds.

9. Delivery of Extra Materials.

10. Delivery of Record Drawings.

1.4 PROJECT CONDITIONS

A. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

1.5 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

C. Coordinate space requirements, supports, and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

E. Coordinate completion and clean-up of work of separate sections.

F. After Clackamas Community College occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Clackamas Community College's activities.

G. Verify conditions of existing Project site. Purpose of survey is to record existing conditions prior to construction for comparison with Contract Documents. Report all conflicts to Architect. Architect will provide revisions to Contract Documents or issue clarifications to accommodate conflicts. Contractor shall be responsible for remedying conflicts which could have been prevented by timely review of existing conditions. All remedies, which vary from Contract Documents, shall be approved by Architect or Owner's representative.

H. General Contractor shall be responsible for laying out the Work, and for all lines and measurements for all Work executed under the Contract Documents. Verify dimensions shown on shop drawings and report errors and inaccuracies in writing to Architect prior to commencing Work.

I. General Contractor shall be responsible for coordination and installation of all architectural, mechanical, electrical and other Work. Owner will not entertain requests for delays, time extensions or additional costs due to lack of coordination of Work by Contractor.

J. Mechanical and Electrical trades shall be responsible for layout of duct work, piping and conduit based on reference lines shown on the Drawings:

1. Electrical drawings are diagrammatic and do not show all offsets, fittings and accessories which may be required.

2. Investigate structural and finish conditions affecting Work and arrange Work accordingly.

3. Provide fittings and accessories as required to fit job conditions.

4. Contractor will coordinate exposed ductwork and pipes with Architect's design Intent.

K. Prepare detailed drawings to a larger scale than Contract Documents in areas where Work is of sufficient complexity to warrant additional detailing. This shall apply to all mechanical and electrical rooms, wiring at switchboard and motor control centers, panel board cabinets in electrical closets and sprinkler piping layouts. Prepare drawings at same sheet size as Contract Drawings and submit with each set of Owner's record drawings. Submit layout drawings for approval before commencing shop fabrication or field erection, only when so directed by Architect.

L. Slots, chases and openings through floors, walls, ceilings and roofs shall be provided by associated trades as specified for new construction. Trades requiring them shall insure that they are installed and properly located, and shall be responsible for any cutting and patching caused by their omission, improper location or construction.

M. Anchor bolts, sleeves, inserts and supports that are required shall be furnished and installed under same section of specifications as respective items to be anchored, with locations as directed by trade requiring them.

N. Sprinkler heads and other devices: Automatic sprinklers shall be installed generally throughout all areas. Compare locations selected for all sprinkler heads with Architectural reflected ceiling plans to prevent conflicts between trades. In cases where mechanical or electrical devices occupy same position, Architect shall determine which elements will move.

O. Utilize spaces efficiently so that adequate accessibility is retained for future maintenance, repairs, modifications and additions.

P. Relocate installed Work which does not provide adequate accessibility.

Q. Changes required in Work of Contractor, caused by Contractor's neglect to coordinate Work with others, shall be made at Contractor's expense.

R. Do all necessary Work to receive or join with Work of other trades.

S. Coordinate Work to provide adequate clearance for installation and maintenance of equipment.

T. Installation and Arrangement:

1. Arrange pipes, ducts, raceways and equipment to permit ready access to valves, cocks, traps, starters, motors and control components.

2. Arrange raceways, wiring and equipment to permit ready access to switches, motors and control components. Doors and access panels shall be kept clear.

3. Right-of-Way: Lines which pitch shall have right-of-way over conduit and EMT raceways. Lines whose elevations cannot be changed shall have right-of-way over conduit and EMT raceways whose elevation can be changed.

4. Offsets and changes in direction of pipes, ducts and raceways shall be made as required to maintain proper headroom and clearances whether or not indicated on Drawings. Provide all traps, vents, fittings, junction boxes, connectors, etc., as required to effect these offsets and change in direction.

5. Where access is required in sensitive design areas (e.g. Lobbies) coordinate location of access with Architect.

U. Drawings and Specifications are arranged for convenience only and do not necessarily determine which trades perform various portions of the Work.V. Transmit to trades doing Work of other Divisions, all information required for Work to be provided under their respective Sections (such as foundations, electric wiring, access door locations, etc.) in ample time for their installation.

V. Consult with trades doing Work of other Divisions so that:

1. Required related Work and information is received from them in ample time for installation.

2. Whenever possible, motors, motor controls, pumps, valves, etc., are of same manufacturer.

PART 2 - PRODUCTS

2.1 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 “Product Requirements”.

2.2 CLEANING PRODUCTS

A. All cleaning products used for progress and final cleaning be Green Seal GS-37 Certified.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Beginning new work means acceptance of existing conditions.

B. Verify that demolition is complete in alterations areas and areas are ready for installation of new work.

C. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

D. Examine and verify specific conditions described in individual specification sections.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

A. Cut, move, or remove items as necessary for access to alterations and renovation work. Replace and restore at completion.

B. Remove debris from area and from concealed spaces, including all previously abandoned elements and associated fasteners.

C. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity. Insulate ducts and piping to prevent condensation in exposed areas.

D. Prepare surfaces and remove surface finishes to provide for proper installation of new work and finishes.

E. Clean substrate surfaces prior to applying next material or substance.

F. Seal cracks or openings of substrate prior to applying next material or substance.

G. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 PRE-INSTALLATION MEETINGS

A. When required in individual specification sections, convene a pre-installation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Architect five working days in advance of meeting date.

D. Prepare agenda and preside at meeting:

1. Review conditions of installation, preparation and installation procedures.

2. Review coordination with related work.

E. Record minutes and distribute electronic copies within two days after meeting to participants, with copies to Architect, Clackamas Community College, participants, and those affected by decisions made.

3.4 GENERAL INSTALLATION REQUIREMENTS

A. Install Products as specified in individual sections.

B. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new Work abuts or aligns with existing, perform a smooth and even transition.

C. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.

D. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.

E. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.

F. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.

G. Re-cover and refinish work that exposes mechanical and electrical work exposed accidentally during the work.

3.5 CUTTING AND PATCHING

A. General:

1. Execute cutting and patching to complete the work, to uncover work, to install improperly sequenced work, to remove and replace defective or non-conforming work, to remove samples of installed work for testing when requested, to provide openings in the work for penetration of mechanical and electrical work, to execute patching to complement adjacent work, and to fit Products together to integrate with other work:

2. Execute work by methods to avoid damage to other work, and which will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

3. Cutting and Patching performed during manufacture of products, or during initial fabrication, erection or installation processes is not considered "Cutting and Patching" under this definition. Drilling of holes to install fasteners and similar operations are also not considered "Cutting and Patching".

4. Unless otherwise specified, requirements of this section apply to Mechanical and Electrical Work along with other CSI sections.

5. Do not perform any cutting or patching in exposed areas in any method that, in the opinion of the Architect, would result in aesthetic damage, or leave obvious physical evidence of cutting and patching of the area. Remove and replace Work judged by Architect to be visually unsatisfactory.

6. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.7. Do not cut or drill any structural work in a manner that would result in reduction of load carrying or deflection ratios. Obtain the approval of the Architect/Engineer when cutting or drilling the following items:

   a. Structural concrete.

   b. Structural decking.

   c. Beams, columns, joists or headers.

   d. Any other structural member or assembly.

7. Re-cover and refinish work that exposes mechanical and electrical work exposed accidentally during the work.

B. Examination:

1. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.

2. After uncovering existing work, inspect conditions affecting performance of proposed Work.

3. Beginning of cutting and patching or alteration Work indicates acceptance of existing conditions.

C. Materials:

1. Restore work with new Products in accordance with requirements of Contract Documents:

a. Type and quality of existing products: Determine by inspection and testing products where necessary.

b. If identical materials are not available, or cannot be used, use materials that match adjacent surfaces to fullest extent possible with regard to visual effect and structural integrity. Use cutting and patching materials and techniques that will result in equal or better performance characteristics.

c. For any proposed change in materials, submit request for substitution as per Section 01 60 00 “Product Requirements”.

D. Preparation for Cutting and Patching:

1. Provide adequate temporary support and bracing prior to cutting any Work.

2. Properly protect other Work during cutting and patching to prevent damage. Protect from adverse weather conditions for that part of the Project which may be exposed during cutting and patching Work.

3. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas through proper coordination with on-going building use.

4. Take precautions to avoid cutting of existing pipe, conduit or ductwork serving any existing area. Schedule relocations or by-passes as required to alleviate any interruptions of service.

E. Preparation for Alteration Work:

1. Cut, move or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

2. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals and deteriorated concrete and masonry. Replace materials as specified for finished Work.

3. Remove debris and abandoned items from area and from concealed spaces.

4. Prepare surfaces and remove surface finishes as required for proper installation of new Work and finishes.

5. Close openings in exterior surfaces to protect existing work and salvage items from weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent condensation.

F. Performance of Cutting and Patching:

1. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

2. Use hand or small power tools designed for sawing and grinding, rather than hammering and chopping. When cutting through asphaltic concrete, concrete or masonry, use cutting machine to provide a neat hole. Cut holes neatly to size required with minimum disturbance of adjacent Work. To avoid marring of existing finished surfaces, cut or drill from exposed or finished side into concealed surfaces. Temporarily cover openings when not in use.

3. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

4. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to full thickness of the penetrated element.

5. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

6. Fit products together to integrate with other Work.

7. Uncover Work to install poorly scheduled Work.

8. Remove and replace defective or non-conforming Work.

9. Remove samples of installed Work for testing when requested.

10. Provide openings in Work for penetration of mechanical and electrical Work.

11. By-pass utility services, such as pipe and conduit, before cutting where such utilities are shown or required to be removed, relocated or abandoned. After by- pass and cutting; cap, valve or plug and seal tight remaining portion of pipe/conduit to prevent entrance of moisture or foreign matter.

12. Patch with seams which are durable and as unnoticeable as possible. Comply with specified tolerances for Work. Where possible, inspect and test patched area to demonstrate integrity of seam. Restore exposed finishes of patched areas and where necessary extend finish restoration into adjoining surfaces in manner which will eliminate evidence of patching and refinishing.

3.6 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from site periodically and dispose off-site. Coordinate waste removal with Waste Management Plan.

3.7 PROTECTION OF INSTALLED WORK

A. Protect installed work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

3.8 STARTING SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.

B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.

C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

D. Verify that wiring and support components for equipment are complete and tested.

E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

F. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.9 DEMONSTRATION AND INSTRUCTION

A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.

D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Clackamas Community College's personnel in detail to explain all aspects of operation and maintenance.

E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.10 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.11 FINAL CLEANING

A. Clean interior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

B. Refer to individual specification sections for specific cleaning requirements.

C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

D. Replace filters of operating equipment.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Remove waste and surplus materials, rubbish, and construction facilities from the site. Coordinate with project Waste Management Plan.

3.12 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.

1. Provide copies to Architect.

2. Provide copies to Clackamas Community College.

B. Refer to Section 01 78 00 “Closeout Submittals”.

C. Completion Inspections

1. Punch List Inspection:

a. Near the end of the work, or any increment of the work established by a time stated in the Construction Schedule and prior to a punch list inspection by the Architect, The Contractor shall conduct an inspection of the work.

b. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and submitted to the Architect.

c. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The Contractor shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is

d. accomplished, the Contractor shall notify the Architect that the facility is ready for the Architect punch list inspection.

e. The Architect will perform the punch list inspection only after having received the Contractor's original written list of deficiencies. The deficiency list shall include the item and indicate the date corrected, initialed by the Contractor and his Sub-Contractor.

f. The Architect shall prepare and issue a Certificate of Substantial Completion with a punchlist of items found to be deficient or otherwise in non- conformance with the Contract Documents.

g. Correct items of work listed in executed Certificates of Substantial Completion.

h. Notify Architect when work is considered finally complete.

2. Final Acceptance Inspection:

a. The Contractor, the Architect, and the Owner's Representative shall be in attendance at the final acceptance inspection.

b. If the Final Acceptance Inspection indicates that all of the punchlist items have not been satisfactorily addressed and subsequent Final Acceptance Inspections are required, The Architect shall be due additional services and a deductive Change Order shall be issued to the contractor in an amount equal to the additional service.

END OF SECTION

SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 WASTE MANAGEMENT REQUIREMENTS

A. Clackamas Community College requires that this project generate the least amount of trash and waste possible.

B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

D. Manage hazardous waste requirements pre local codes and regulations.

E. Required Recycling: The following may not be disposed of in landfills or by incineration:

1. Aluminum and plastic beverage containers.
2. Corrugated cardboard.
3. Wood pallets.
4. Dimensional wood and composite wood products.
5. Land clearing debris, including brush, branches, logs, and stumps.
6. Concrete.
7. Concrete masonry units.
8. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
9. Glass.
10. Gypsum drywall and plaster.
11. Carpet, carpet cushion, carpet tile, and carpet remnants, both new and removed: refer to DuPont (http://flooring.dupont.com) and Interface (www.interfaceinc.com) for reclamation programs.
12. Paint.
13. Windows, doors, and door hardware.
14. Plumbing fixtures.
15. Mechanical and electrical equipment.
16. Fluorescent lamps (light bulbs).

F. Salvage and Reuse: Refer to drawings for the extent of materials to be salvaged, stored, and reused.

G. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.

H. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.

I. Methods of trash/waste disposal that are not acceptable are:

1. Burning on the project site.
2. Burying on the project site.
3. Dumping or burying on other property, public or private.
4. Other illegal dumping or burying.
5. Incineration, either on- or off-site.

J. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.2 RELATED REQUIREMENTS

A. Section 01 31 00 “Project Management Requirements” for additional requirements for Pre-construction and Progress Meetings.

B. Section 01 60 00 “Product Requirements” for waste prevention requirements related to packaging disposal.

C. Section 01 70 00 “Execution Requirements” for trash/ waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.3 SUBMITTALS

A. See Section 01 33 00 “Submittals” for submittal procedures.

B. Waste Management Plan: Include the following information:

1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.

C. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.

1. Submit updated Report with each Application for Progress Payment
2. Submit Report on a form acceptable to Clackamas Community College.
3. Landfill Disposal: Include the following information:

a. Identification of material.

b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.

c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.

d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.

4. Recycled and Salvaged Materials: Include the following information for each:

a. Identification of material, including those retrieved by installer for use on other projects.

b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.

c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.

d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.

e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.

5. Material Reused on Project: Include the following information for each:

a. Identification of material and how it was used in the project.

b. Amount, in tons or cubic yards.

c. Include weight tickets as evidence of quantity.

6. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

PART 2 - PRODUCTS

2.1 PRODUCT SUBSTITUTIONS

A. See Section 01 60 00 “Product Requirements” for substitution submission procedures.

B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01 60 00 “Product Requirements”:

1. Relative amount of waste produced, compared to specified product.

2. Proposed disposal method for waste product.

3. Markets for recycled waste product.

PART 3 - EXECUTION

3.1 WASTE MANAGEMENT PROCEDURES

A. See Section 01 31 00 “Project Management Requirements” for additional requirements for project meetings, reports, submittal procedures, and project documentation.

B. See Section 01 50 00 “Temporary Facilities and Controls” for additional requirements related to trash/ waste collection and removal facilities and services.

C. See Section 01 60 00 “Product Requirements” for waste prevention requirements related to delivery, storage, and handling.

D. See Section 01 70 00 “Execution Requirements” for trash/waste prevention procedures related to cutting and patching, installation, protection, and cleaning.

3.2 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Portland Community College, and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings.

1. Pre-bid meeting.
2. Pre-construction meeting.
3. Regular job-site meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.

1. Provide containers as required.
2. Provide temporary enclosures around piles of separated materials to be recycled or salvaged.
3. Provide materials for barriers and enclosures that are nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
4. Locate enclosures out of the way of construction traffic.
5. Provide adequate space for pick-up and delivery and convenience to subcontractors.
6. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.

F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

END OF SECTION

SECTION 01 78 00 - CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Project Record Documents.
2. Operation and Maintenance Data.
3. Extra Materials
4. Warranties and bonds.

B. RELATED WORK

1. Section 01 33 00 “Submittals”: Submittals procedures, shop drawings, product data, and samples.
2. Section 01 70 00 “Execution Requirements”: Contract closeout procedures.
3. Individual Product Sections: Specific requirements for operation and maintenance data.
4. Individual Product Sections: Specific requirements for extra materials.
5. Individual Product Sections: Warranties required for specific products or Work.

1.3 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment or before.

1. Submit three copies of scanned record documents in PDF format on CDs.

B. Operation and Maintenance Data and Manuals:

1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
2. For equipment, or component parts of equipment put into service during construction and operated by Clackamas Community College, submit completed documents within ten days after acceptance.
3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
4. Submit two sets of revised final documents in final form and two scanned copies on CD's, within 10 days after final inspection.

C. Extra Materials:

1. Deliver extra materials as specified for individual materials to Owner's designated on-site location(s).
2. All materials shall be clean, securely packaged, and sealed.
3. All materials shall be clearly labeled as to type of material, color, pattern, finish legend or specification codes (ie. Carpet Type 1) general description of installed locations, and

contact information for supplier. Contractor to coordinate with owner on desired % of attic stock prior to commencement of the submittal process.

D. Warranties and Bonds:

1. For equipment or component parts of equipment put into service during construction with Clackamas Community College's permission, submit documents within 10 days after acceptance.

2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.

3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 - PRODUCTS

- NOT USED -

PART 3 - EXECUTION

3.1 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:

1. Drawings.

2. Specifications.

3. Addenda.

4. Change Orders and other modifications to the Contract.

5. Reviewed shop drawings, product data, and samples.

6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Clackamas Community College.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress including all drawings prepared for Design-Build components.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer's name and product model and number.

2. Product substitutions or alternates utilized.

3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured depths of foundations in relation to finish first floor datum.

2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.

4. Field changes of dimension and detail.

5. Details not on original Contract drawings.

G. Contractor Quality Control documentation

3.2 OPERATION AND MAINTENANCE DATA

A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:

1. Product data, with catalog number, size, composition, and color and texture designations.

2. Information for re-ordering custom manufactured products.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional information as specified in individual product specification sections.

E. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. The following shall be considered minimum requirements. If the requirements within individual sections exceed the requirements listed below, the more excessive requirement shall govern.

B. For Each Item of Equipment and Each System:

1. Description of unit or system, and component parts.

2. Identify function, normal operating characteristics, and limiting conditions.

3. Include performance curves, with engineering data and tests.

4. Complete nomenclature and model number of replaceable parts.

C. Panel board Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

D. Include color coded wiring diagrams as installed.

E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

G. Provide servicing and lubrication schedule, and list of lubricants required.

H. Include manufacturer's printed operation and maintenance instructions.

I. Include sequence of operation by controls manufacturer.

J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

K. Provide control diagrams by controls manufacturer as installed.

L. Provide Contractor's coordination drawings, with color coded piping diagrams as installed in PDF format on CD's.

M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

O. Include test and balancing reports.

P. Additional Requirements: As specified in individual product specification sections.

3.5 OPERATION AND MAINTENANCE MANUALS

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

B. Prepare data in the form of an instructional manual. Organize scanned E-copies in similar format.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.

F. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.

G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

H. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.

I. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:

1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.

2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:

a. Significant design criteria.

b. List of equipment.

c. Parts list for each component.

d. Operating instructions.

e. Maintenance instructions for equipment and systems.

f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

3. Part 3: Project documents and certificates, including the following:

a. Shop drawings and product data.

b. Air and water balance reports.

c. Certificates.

d. Photocopies of warranties and bonds.

J. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

K. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect, Consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

3.6 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Clackamas Community College's permission,

B. leave date of beginning of time of warranty until the Date of Substantial completion is determined.

C. Verify that documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Retain warranties and bonds until time specified for submittal.

F. Warranty and Bond Manual

1. Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.

2. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

3. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

4. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

5. Provide scanned copy of Manual in PDF format on CD's and insert in pocket of manual.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Salvage of existing items to be reused or recycled.

1.3 DEFINITIONS

A. General: Application: The following requirements apply to those items indicated in the Drawings.

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

C. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and store for sale or reuse.

D. Remove and Save for Reuse: Same as “Remove and Salvage.”

E. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

F. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

G. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Unless otherwise indicated, salvaged and saved items are the property of Owner.

C. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished, removed and salvaged items.
    a. Site-walk Review: Walk-through project with Architect to review all items for salvage and reuse.
    b. Review whether additional survey of existing condition by structural engineer is required.

c. Review means and methods of demolition for items indicated to be salvaged or saved for reuse.

d. Review means and methods of demolition for items to be removed and adjacent to construction to remain visible.

2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.

3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

4. Review areas where existing construction is to remain and requires protection.

5. Document meeting with meeting minutes or other acceptable form, for review and distribution of all items to be salvaged and saved for reuse.

1.6 SUBMITTALS

A. Qualification Data: For refrigerant recovery technician, where in scope of Work.

B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.

C. Schedule of Selective Demolition Activities: After predemolition conference, indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted, where applicable.

a. Include list of items for salvage.

b. Indicate any special removal requirements or methods.

2. Interruption of utility services. Indicate how long utility services will be interrupted.

3. Coordination for shutoff, capping, and continuation of utility services.

4. Use of stairs.

5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

D. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces that might be misconstrued as damage caused by demolition operations. Comply with Owner’s requirements. Submit before Work begins.

E. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.7 CLOSEOUT SUBMITTALS

A. Inventory: Submit a final list of items that have been removed and salvaged.

1.8 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.9 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

1. Before selective demolition, Contractor will verify adequacy of structure and shoring.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. Hazardous materials will be removed by Owner before start of the Work.

2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Storage or sale of removed items or materials on-site is permitted where reviewed with Contractor, Owner and Architect for location and procedures prior to commencement of demolition Work.

1. Provide adequate storage areas for salvaged heavy timber and other wood items, including sufficient area required for sorting and grading activities.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

G. Shoring: Prior to commencement of demolition Work, verify all required shoring is in place for structural removal and modification.

1.10 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

B. Coordinate storage layout areas with demolition and new construction schedules as to not interfere with Owner’s and Contractor’s operations.

C. Coordinate area required for heavy timber sorting and grading with wood grader.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

B. Standards: Comply with ASSE A10.6 and NFPA 241.

C. Recycle and/ or salvage non-hazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be divided from disposal and whether the materials will be sorted on-site or comingled. Excavated soil and land-clearing debris do not contribute to this credit. Calculations may be done by weight or volume, but shall be consistent throughout. The minimum percentage of debris to be recycled or salvaged for each point threshold are 50 percent for 1 point and 75 percent for 2 points.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Perform an engineering survey of 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 building demolition operations.

1. Review required scope of surveying in predemolition conference.

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

3. Perform surveys where removal of structure has not been completed.

D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.

1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

2. 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.

3.2 PREPARATION

A. Refrigerant: Where in scope of Work, before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

1. Arrange to shut off utilities with utility companies.

2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.

a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.

b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.

c. Equipment to Be Removed: Disconnect and cap services and remove equipment.

d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.

2. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

3. Cover and protect equipment that have not been removed.

B. Temporary Shoring: Design, 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.

1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.5 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:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.

2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.

3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

4. Cut items complying with Section 01 73 29 “Cutting and Patching.”

5. Do not use methods for removing wood construction that damages surfaces or edges.

6. 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 portable fire-suppression devices during flame-cutting operations.

7. Maintain fire watch during and for at least four (4) hours after flame-cutting operations.

8. Maintain adequate ventilation when using cutting torches.

9. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

10. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

11. Dispose of demolished items and materials promptly.

B. 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.

C. Removed and Salvaged Items: Verify during preconstruction meeting.

1. Clean salvaged items.

a. Clean items for sale and/or reuse to functional condition adequate for reuse.

2. Pack or crate items after cleaning. Identify contents of containers.

a. Pack or crate items after cleaning and repair, and identify contents of containers for items for sale.

3. Store items in a secure area until delivery to Owner.

4. Metal components, and crane rail and equipment storage: Store in dry locations, off the ground.

5. Transport items to Owner's storage area designated by Owner.

6. 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.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections, and one of the following:

1. Using power-driven saw, cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.

2. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.

B. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

C. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction and recycle or dispose of them.

1. Do not allow demolished materials to accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

3. 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.

3.8 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations.

3.9 SELECTIVE DEMOLITION SCHEDULE

A. All items listed below shall be reviewed, prior to commencement of demolition Work, during the predemolition conference.

B. Remove: As indicated in Drawings.

C. Remove and Salvage/ Save for Reuse: As indicated in Drawings.

D. Existing to Remain: As indicated in Drawings, or otherwise not indicated for removal.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.3 COORDINATION

A. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

B. Coordinate all items to be cast-in to concrete. Contractor shall review items prior to placement.

1.4 SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Samples: Cured Samples for each exposed product and for each color and texture specified, in manufacturer's standard size appropriate for each type of work.

D. Qualification Data: For Installer, manufacturer, and testing agency.

1. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Architects and owners, and other information specified.

E. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Form materials and form-release agents.
3. Steel reinforcement and accessories.
4. Curing compounds.
5. Bonding agents.
6. Repair materials.

F. Material Test Reports: For the following, from a qualified testing agency:

1. Aggregates: Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

G. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.

E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

2. ACI 315 “Details and Detailing of Concrete Reinforcement”.

3. ACI 318 “Building Code Requirements for Reinforced Concrete”.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301.

2. ACI 117.

3. ACI 303R, for architectural concrete finishes.

2.2 FORM-FACING MATERIALS

A. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

B. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

2. Form release agent for form liners shall be acceptable to form liner manufacturer.

2.3 VAPOR BARRIER

A. Sheet Vapor Barrier: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.

1. Basis-of-Design Product, VB-1: Stego Wrap 15 mil Class A by Stego Industries, LLC.; www.stegoindustries.com.

a. Vapor Permeance: 0.0098 Perms per ASTM E 154.

2. Other Approved Products: Provide one of the following, or other meeting the moisture vapor emission rate requirement of concrete moisture vapor reduction admixture.

a. Vapor Block VBLP15 by Raven Industries, Inc.; www.ravenefd.com.

1) Vapor Permeance: 0.0057 Perms per ASTM E 96.

b. Perminator 15 mil by W. R. Meadows, Inc.; www.wrmeadows.com.

1) Vapor Permeance: 0.0063 Perms per ASTM E 96.

3. Manufacturer's recommended tape and mastic for sealing at overlaps and openings.

2.4 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed. Refer to Structural Notes or structural drawings.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25.

C. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.5 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.6 CONCRETE MATERIALS

A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C 150/C 150M, Type I/II.

2. Fly Ash: ASTM C 618, Class F or C. Refer to Structural Notes on drawings for allowed quantities.

3. Silica Fume: ASTM C 1240, amorphous silica.

C. Normal-Weight Aggregates: ASTM C 33/C 33M, coarse aggregate or better, graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 1-1/2 inches, 1 inch nominal.

2. Combined Aggregate Gradation: Well graded from coarsest to finest with not more than 18 percent and not less than 8 percent retained on an individual sieve, except that less than 8 percent may be retained on coarsest sieve and on No. 50 sieve, and less than 8 percent may be retained on sieves finer than No. 50.

D. Water: ASTM C 94/C94-M and potable.

2.7 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260/C 260M.

B. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.

2. Retarding Admixture: ASTM C 494/C 494M, Type B.

3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.

6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

C. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C 494/C 494M, Type C.

2.8 CURING MATERIALS

A. General: For all topical treatments, confirm compatibility with finish floor manufacturer's requirements.

B. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

1. Bon Tool Co.

2. Vexcon Chemicals Inc.

C. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 ox./sq. yd. (305 g/sq. m) when dry.

D. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

E. Water: Potable.

F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

2.9 REPAIR MATERIALS

A. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.

2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.

4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.10 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 25 percent.

2. Combined Fly Ash or Pozzolan and Slag Cement: 20 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.

3. Silica Fume: 10 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

D. Synthetic Fiber: uniformly disperse in concrete mix at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd. (0.90 kg/cu. m).

E. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.

2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

2.11 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

1. Prior to formwork erection, confirm Architect's review and approval of concrete mockup for finished-appearance concrete surfaces.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class B, 1/4 inch for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

F. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

G. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

H. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

I. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

J. Place form liners accurately to provide finished surface texture indicated. Provide solid backing and attach securely to prevent deflection and maintain stability of liners during concreting. Prevent form liners from sagging and stretching in hot weather. Seal joints of form liners and form-liner accessories to prevent mortar leaks. Coat form liner with form-release agent.

3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50

deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 WATERSTOPS INSTALLATION

A. Provided by Section 07 13 26 “Sheet Membrane Waterproofing” for installation by this Section; coordinate with requirements for that Section to install waterstops with formwork and reinforcing.

3.5 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor and radon barrier. Repair damage and reseal vapor and radon barrier before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.

If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.

2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

3.7 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.

1. Apply scratch finish to surfaces to receive concrete floor toppings.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing.

D. Trowel Finish, CONC-1: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.

2. Finish surfaces to the following tolerances, according to ASTM E 1155, for a randomly trafficked floor surface:

a. At Formed Suspended Slabs: Specified overall values of flatness, F(F) 30; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 15.

3. The concrete thicknesses indicated are minimums; Contractor shall anticipate additional concrete at center of structural bays where framing will deflect with placement.

4. For sealer at locations indicated CONC-1 refer to Section 07 19 00 “Water Repellents”.

E. Trowel and Fine-Broom Finish, CONC-2: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thinset method. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

3.8 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

a. Water.

b. Continuous water-fog spray.

c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.

a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.

b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.

c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.9 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

4. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

D. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

E. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

B. Inspections: As indicated in the General Structural Notes.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

   a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete; ASTM C 173/C 173M, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.

5. Unit Weight: ASTM C 567/C 567M, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

6. Compression Test Specimens: ASTM C 31/C 31M.

   a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.

   b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.

7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
    a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
10. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Steel framing and supports for mechanical, electrical equipment and pocket door-partition.
2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
3. Slotted channel framing for re-configurable structures (Unistrut).

1.3 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 metal fabrications that are anchored to or that receive other work. 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.

1.4 SUBMITTALS

A. Product Data: For the following:

1. Paint products.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for all items specified in this Section, including but not limited to all items indicated in Summary Article above.

C. Welding certificates.

D. Research/ Evaluation Reports: For post-installed anchors, from ICC-ES.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.6 FIELD CONDITIONS

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

PART 2 - PRODUCTS

2.1 METALS

A. 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.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

C. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

D. Plate and Bar: ASTM A 36/A 36M.

E. Slotted Channel Framing (Unistrut): Cold-formed metal box channels (struts) complying with MFMA-4.

1. Size of Channels: 1-5/8 by 1-5/8 inches or other manufacturer standard sizes as indicated or as required per delegated design.

2. Material Interior (Conditioned/ Controlled Humidity): Cold-rolled steel, ASTM A1008/A1008M, structural steel, Grade 33; 0.0677-inch minimum thickness; hot-dip galvanized after fabrication.

3. Basis-of-Design Product: Unistrut Metal Framing System by Unistrut USA, Div. of Atkore Intl.; www.unistrut.us.

2.2 FASTENERS

A. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.

B. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

C. Post-Installed Anchors: Torque-controlled expansion anchors, screw type or chemical anchors. Refer to details in the documents for specific anchor type.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.

2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 2 stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

D. 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 B633, Class Fe/Zn 5, as needed for fastening to inserts.

2.3 MISCELLANEOUS MATERIALS

A. Shop Primers: Provide primers that comply with Section 09 91 00 “Painting".

B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

D. Welding Electrodes: Comply with AWS requirements.

2.4 FABRICATION, GENERAL

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.

1. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. 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.

D. 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.

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

F. Form exposed work with accurate angles and surfaces and straight edges.

G. 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.

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

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

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

K. 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 framing and supports not specified in other Sections as needed to complete the Work.

1. Steel framing and supports for applications where framing and supports are not specified in other Sections.

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.

1. Fabricate units from slotted channel framing where indicated.

2. Furnish inserts for units installed after concrete is placed.

C. Prime miscellaneous framing and supports with zinc-rich primer.

2.6 STEEL AND IRON FINISHES

A. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:

1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

3. Other Items: SSPC-SP 3, "Power Tool Cleaning."

B. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

C. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

1. Color and Gloss: As selected by Architect.

PART 3 - EXECUTION

3.1 ERECTION

A. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

B. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.

2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

C. Splice members only where indicated.

D. Do not use thermal cutting during erection except as approved by Architect on a case-by-case basis. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.

E. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.2 FIELD CONNECTIONS

A. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.

3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," for mill material.

3.3 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 screws, 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.

3.4 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.

B. Anchor supports for ceiling hung toilet partitions operable partitions overhead doors and overhead grilles securely to, and rigidly brace from, building structure.

C. Support steel girders on solid grouted masonry, concrete, or steel pipe columns. Secure girders with anchor bolts embedded in grouted masonry or concrete or with bolts through top plates of pipe columns.

1. Where grout space under bearing plates is indicated for girders supported on concrete or masonry, install as specified in "Installing Bearing and Leveling Plates" Article.

3.5 ADJUSTING AND CLEANING

A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 09 91 00 "Painting."

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 06 10 53 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Preservative treated wood materials.
2. Fire retardant treated wood materials.
3. Miscellaneous framing and sheathing.
4. Concealed wood blocking, nailers, and supports.
5. Wood blocking and nailers.
6. Wood furring and grounds.
7. Plywood backing panels in Communications and electrical rooms.

1.3 DEFINITIONS

A. Boards or Strips: Lumber of less than 2-inch nominal size in least dimension.

B. Dimension Lumber: Lumber of 2-inch nominal size or greater but less than 5- inch nominal size in least dimension.

1.4 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. 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 and net amount of preservative retained.
2. 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 based on testing by a qualified independent testing agency.
3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to 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.

B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

C. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

D. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.

2. Fire-retardant-treated wood.

1.5 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.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. 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 grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

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

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.

D. Application: Treat all rough carpentry unless otherwise indicated.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: 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. Use treatment that does not promote corrosion of metal fasteners.

2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201/D 3201M at 92 percent relative humidity. Use where exterior type is not indicated.

3. Design Value Adjustment Factors: Treated lumber plywood shall be tested according to ASTM D 5516 and design value adjustment factors shall be calculated according to ASTM D 6305. Span ratings after treatment shall be not less than span ratings specified.

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

2.4 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.

2. Nailers.

3. Furring.

4. Grounds.

B. Dimension Lumber Items: Construction or No. 2 grade lumber of the following species:

1. Western woods; WCLIB or WWPA.

C. Concealed Boards: 19 percent maximum moisture content and the following species and grades:

1. Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.

D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.5 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, A-C, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch (19-mm) nominal thickness.

2.6 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

B. Nails, 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.

2.7 MISCELLANEOUS MATERIALS

A. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate blocking, and similar supports to comply with requirements for attaching other construction.

C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.

D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

E. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

G. Where wood-preservative-treated lumber is installed adjacent to or in contact with galvanized metal, metal decking, metal framing, or zinc-coated metal, install continuous flexible flashing separator between wood and metal.

H. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with either of the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).

2. ICC-ES evaluation report for fastener.

I. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for screeding or 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.

3.3 WOOD FURRING INSTALLATION

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

B. Furring to Receive Plywood or Hardboard Paneling: Install 1-by-3-inch nominal- (19-by-63-mm actual-) size furring horizontally and vertically at 24 inches (610 mm) o.c.

END OF SECTION

SECTION 06 20 23 - INTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes interior finish carpentry including but not limited to the following:

1. Wood trim (WD-3).

1.3 COORDINATION

A. Coordinate wood finish with wood grille wall screen (WD-2) in Section 09 54 26 “Linear Wood Walls and Ceilings”.

B. Coordinate required blocking in walls for attaching and support.

C. 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.

1.1 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.2 DEFINITIONS

A. MDF: Medium-density fiberboard.

B. MDO: Plywood with a medium-density overlay on the face.

1.3 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.

1. 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 and net amount of preservative retained. Include chemical-treatment manufacturer's written instructions for finishing treated material.

2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced before shipment to Project site to levels specified.

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

1. Show connection details half-size.

2. Show coordination with steel stair and railing construction for attachment spacing.

3. Apply WI Certified Compliance Program label to Shop Drawings.

C. Samples:

1. Woodworking Products: For each species, cut, profile, and finish; demonstrate range of color and grain variation expected in Work. Two feet by board, or molding, width; One foot by panel width.

a. Solid Stock: Two samples of each, finish one side and one edge.

b. Plywood and Panels: Two samples of each, one finished.

D. Qualification Data: For Installer/ Fabricator of each type required.

E. Product Certificates: For each type of product.

F. Woodwork Quality Standard Compliance Certificates: WI Certified Compliance Program certificates.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For woodwork finishes to include in operation and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Quality Standard: Unless otherwise indicated, comply with the Woodwork Institute's "Architectural Woodwork Standards" for grades of indicated for construction, finishes, installation, and other requirements.

1. Provide labels and certificates from AWI or WI certification program indicating that woodwork complies with requirements of grades specified.

2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

B. 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. Shop is a certified participant in AWI's Quality Certification Program.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers between each bundle to provide air circulation. Protect materials from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

B. Deliver wood materials only when environmental conditions comply with requirements specified for installation areas. If materials must be stored in other than installation areas, store only where environmental conditions comply with requirements specified for installation areas.

1.7 FIELD CONDITIONS

A. Temperature and Humidity For Installation: As required by referenced quality standards, and fabricator to maintain moisture content of installed Work within 1.0 percent of optimum moisture content, maintain conditions until final acceptance.

B. Do not install materials that are wet, moisture damaged, or mold damaged.

C. Field Measurements: Taken prior to fabrication of woodwork to be fitted to other construction, verify dimensions on shop drawings.

1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed, and indicate measurements on Shop Drawings.

1.8 SEQUENCE AND SCHEDULING

A. Complete work in installation areas which could damage architectural woodwork, and establish controlled environmental conditions prior to delivery of materials.

B. Conditioning Period: Store wood products for four days (96 hours) at Project prior to installation.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL FABRICATORS

A. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of architectural wood cabinets with sequence-matched wood paneling, wood doors with face veneers that are sequence matched with woodwork and transparent-finished wood doors that are required to be of same species as woodwork.

2.2 MATERIALS, GENERAL

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches (75 mm) wide.

2. Wood Moisture Content: 10 percent.

B. Hardwood Lumber for Transparent Finishes: AWS Premium Grade requirements and appearance represented by approved samples; provide species and cut scheduled, unless indicated otherwise; selected for uniformity in grain and color, and free of character marks. Provide where indicated, and the following applications:

1. Provide specified wood for opaque finishes where indicated to be painted.

C. Hardwood Lumber for Opaque Finishes: AWS Quality Standards Sections 6 and 7, Custom Grade; solid stock AWI listed closed-grain hardwood.

1. Provide at painted wood base.

D. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated; formaldehyde free.

1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 150, unless indicated otherwise:

a. Provide MR50 at areas where water resistance is required.

b. Edge sealed; profile indicated.

2.3 WOOD TRIM, WD-3

A. Species: Sugar maple (Acer saccharum).

B. Profiles: As indicated.

C. Finish: Stained, color as selected by Architect, to match finish appearance of wood grille wall screen (WD-2) in Section 09 54 26 “Linear Wood Walls and Ceilings”.

2.4 MISCELLANEOUS MATERIALS

A. Metals: Refer to Section 05 50 00 “Metal Fabrications”.

B. Fasteners: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.

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

1. Confirm compatible with substrate treatment and framing types without galvanic or corrosive reactions.

B. Low-Emitting Materials: Adhesives shall comply with the testing and product 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."

C. Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for use. Clear, non-staining or color-altering where exposed.

D. Multipurpose Construction Adhesive: Formulation complying with ASTM D 3498 that is recommended for indicated use by adhesive manufacturer.

E. Furring, Blocking, Shims, and Hanging Strips: Softwood lumber, kiln dried to less than 15 percent moisture content. Provide pressure treated wood where in contact with concrete.

F. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

1. Comply with applicable requirements of ASTM A 307 for screws and ASTM F 1667 for nails.

2.5 FABRICATION

A. Fabricate interior finish carpentry to dimensions, profiles, and details indicated with openings and mortises precut, where possible, to receive hardware and other items and work.

B. Scribe wood base materials to finished floor surfaces, and jamb molding tight to adjacent wall surfaces.

C. Ease edges to 0.0625 inch radius, for corners of cabinets and edges of solid wood (lumber) members less than 1 inch in nominal thickness, 0.125 inch radius for edges of rails and similar members over 1 inch in nominal thickness.

D. Standing and Running Trim and Rails Standing and Running Trim and Rails: AWS Quality Standards Sections 6 and 7, Custom Grade.

2.6 FINISHING

A. General: Finish interior finish carpentry with finish indicated on Drawings.

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

C. Transparent Finish: Hand-applied using manufacturer's recommended procedures; provide four-coat application on all exposed surfaces and buff to final appearance per approved samples. Provide two-coat finish on concealed surfaces, buffing is not required; Zero VOC content. Comply with AWS Section 5.

1. Grade: Match fabrication grade indicated.

2. Finish: Match Architect’s sample. All finishes shall be satin.

a. AWI System 5, conversion varnish or as indicated.

1) Application: All exposed wood, unless indicated otherwise.

b. AWI System 4 Latex Acrylic, Waterbased, Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.

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

3.2 PREPARATION

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

B. Before installation, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours unless longer conditioning is recommended by manufacturer.

3.3 INSTALLATION

A. Do not use materials that are unsound; warped; improperly treated or finished; inadequately seasoned; too small to fabricate with proper jointing arrangements; or with defective surfaces, sizes, or patterns.

B. Install woodwork plumb, level, true and straight with no distortions. Scribe and cut woodwork to fit adjoining work including variations in finish floors, and refinish cut surfaces or repair damaged finish at cuts. Coordinate woodwork with electrical and plumbing work.

1. Shims: Concealed, provide as required.

2. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.

C. Interior Finish Carpentry: Comply with requirements, and AWI Section 6, matching grades indicated, and the following:

1. Standing and Running Trim: Division A, Premium grade. Gaps behind members shall be filled and finished to match the backing surface.

a. Install wood base by back attaching or by direct adhering to base sheet material. Attachment through exposed faces is not allowed.

D. Field Joints: Acceptable only as shown on approved submittals. Install work with the minimum number of joints possible. Cope and miter joints; stagger joints in adjacent and related members. Comply with AWI quality standards referenced for shop fabrication.

E. Tolerances: 0.125 inch in 8 feet for plumb and level (including tops); and with no variations in flushness of adjoining surfaces, except where referenced standard is tighter.

3.4 ADJUSTMENT, CLEANING, FINISHING, AND PROTECTION

A. Repair damaged and defective interior finish carpentry where possible to eliminate defects functionally and visually; where not possible to repair replace Work. Adjust joinery for uniform appearance.

B. Clean interior finish carpentry on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.

C. Provide final protection and maintain conditions, in a manner acceptable to Fabricator and Installer, which ensures architectural interior finish carpentry being without damage or deterioration at time of substantial completion.

END OF SECTION

SECTION 06 41 00 - ARCHITECTURAL CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Plastic-laminate-clad architectural casework (PL-1, PL-2, PL-3).
2. Cabinet hardware and accessories.
3. Wood furring, blocking, shims, and hanging strips for installing architectural wood cabinets unless concealed within other construction before cabinet installation.

B. Related Requirements:

1. Section 06 41 17 “Solid Surfacing Fabrications” for coordination with solid surface countertops.
2. Division 22 “Plumbing” Sections for coordination of fixtures with cabinets.

1.3 SUBMITTALS

A. Product Data: For each type of product, including panel products, fire-retardant-treated materials, 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 each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Show details full size.
2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
3. Show locations and sizes of cutouts and holes for electrical switches and outlets and other items installed in architectural wood cabinets.
4. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.
5. Apply AWI Quality Certification Program label to Shop Drawings.
6. For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.

C. Samples for Initial Selection:

1. Shop-applied opaque finishes.
2. Plastic laminates.

D. Samples for Verification:

1. Plastic laminates,12 by 12 inches (300 by 300 mm), for each type, color, pattern, and surface finish, with one sample applied to core material and specified edge material applied to one edge.

2. Corner pieces as follows:
   a. Cabinet-front frame joints between stiles and rails, as well as exposed end pieces, 18 inches (450 mm) high by 18 inches (450 mm) wide by 6 inches (150 mm) deep.
   b. Miter joints for standing trim.
3. Exposed cabinet hardware and accessories, one unit for each type and finish.

E. Qualification Data: For fabricator.

F. Product Certificates: For each type of product, including but limited to the following:
1. Composite wood and agrifiber products.
2. Thermoset decorative panels.
3. High-pressure decorative laminate.
4. Adhesives.

G. Field quality-control reports.

H. Evaluation Reports: For fire-retardant-treated materials, from ICC-ES.

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. Shop is a certified participant in AWI's Quality Certification Program.

B. Installer Qualifications: Certified participant in AWI's Quality Certification Program.

C. 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.

D. Overage: Ensure appropriate amount of overage to account for quality requirement; for all WD-# types allow for approximately 25 percent additional materials to allow sorting and rejecting to meet quality requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

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

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install cabinets 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.

B. Environmental Limitations: Do not deliver or install cabinets 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 17 and 50 percent during the remainder of the construction period.

C. Field Measurements: Where cabinets are 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 cabinets by field measurements before being enclosed, and indicate measurements on Shop Drawings.

D. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. 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 wood-veneer-faced architectural cabinets can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural wood cabinets indicated for construction, finishes, installation, and other requirements.

1. Provide labels and certificates from AWI certification program indicating that woodwork, including installation, complies with requirements of grades specified.

2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

B. Type of Construction: Frameless.

C. Cabinet and Door and Drawer Front Interface Style: Flush overlay.

D. Reveal Dimension: As indicated on Drawings.

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

F. Laminate Cladding for Exposed Surfaces:

1. Basis-of-Design Product, PL-1: Laminate by Wilsonart, www.wilsonart.com.

a. Color/ Finish: Fusion Maple, Matte.

b. Application: Upper and lower verticals, casework interiors.

2. Basis-of-Design Product, PL-2: Laminate by Wilsonart.

a. Color/ Finish: No. 4783-80 White Tigrus.

b. Application: Casework countertops.

3. Basis-of-Design Product, PL-3: As selected by Architect.

a. Color/ Finish: As selected by Architect.

b. Application: Match existing in Catering area.

G. Materials for Semi-Exposed Surfaces:

1. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, NEMA LD 3, Grade VGS.

2. Edges of Plastic-Laminate Shelves: High-pressure decorative laminate, NEMA LD 3, Grade VGS.

3. For semi-exposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, NEMA LD 3, Grade VGS.

H. Dust Panels: 1/4-inch (6.4-mm) plywood or tempered hardboard above compartments and drawers unless located directly under tops.

I. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.

1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners.

2.2 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches (75 mm) wide.

2. Wood Moisture Content: 8 to 13 percent.

B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130, unless indicated otherwise.

a. Provide Medite FR by Roseburg; www.roseburg.com.

2. Softwood Plywood: DOC PS 1, medium-density overlay.

3. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products in accordance with test method indicated by a qualified testing agency.

1. Use treated materials that comply with requirements of referenced quality standard. Do not use materials 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 qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.

B. Fire-Retardant Fiberboard: MDF panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, 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 200 or less in accordance with ASTM E84.

2.4 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets except for items specified in Section 08 71 00 "Door Hardware".

B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 135 degrees of opening.

C. Back-Mounted Pulls: Wire pull, per Owner Standards, BHMA A156.9, B02011.

1. Casework Pull, HDWR-1: Provide 4 inch wire pull.

a. Application: Typical at Work Room.

2. Casework Pull, HDWR-2: Provide Tab Lip Bar by Continental Hardware; www.continental-hardware.com.

a. Size: 4 inch.

b. Application: Meeting Rooms.

3. Finish: Stainless steel.

4. Installation: Horizontal on drawers and doors.

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

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

F. Shelf Rests: BHMA A156.9, B04013; metal, two-pin type with shelf hold-down clip.

G. Drawer Slides: BHMA A156.9.

1. Grade 1: Side mounted and extending under bottom edge of drawer; full-extension type; zinc-plated steel with polymer rollers.

2. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-overtravel-extension type; zinc-plated-steel ball-bearing slides.

3. For drawers not more than 3 inches (75 mm) high and not more than 24 inches (600 mm) wide, provide Grade 1.

4. For drawers more than 3 inches (75 mm) high but not more than 6 inches (150 mm) high and not more than 24 inches (600 mm) wide, provide Grade 1HD-100.

5. For drawers more than 6 inches (150 mm) high or more than 24 inches (600 mm) wide, provide Grade 1HD-200.

6. For computer keyboard shelves, provide Grade 1HD-100.

7. For trash bins not more than 20 inches (500 mm) high and 16 inches (400 mm) wide, provide Grade 1HD-200.

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

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

J. Door and Drawer Silencers: BHMA A156.16, L03011.

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

1. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.

2. Bright Chromium Plated: BHMA 625 for brass or bronze base; BHMA 651 for steel base.

3. Satin Stainless Steel: BHMA 630.

2.5 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 metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

C. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.

1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.6 FABRICATION

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

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

1. Corners of Cabinets: 1/16 inch (1.5 mm) unless otherwise indicated.

C. 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.

1. 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 before disassembling for shipment.

D. Shop-cut openings to maximum extent possible to receive hardware, appliances, 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

PART 3 - EXECUTION

3.1 PREPARATION

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

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

3.2 EXAMINATION

A. Examine substrates to receive solid surface material countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.

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

3.3 CABINET INSTALLATION

A. Grade: Install cabinets to comply with same grade as item to be installed.

B. Assemble cabinets and complete fabrication at Project site to the extent that it was not completed in the shop.

C. Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

1. Provide toe kick panels scribed to floors; toe kick finish shall match base cabinet finish.

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

E. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.

1. For shop finished items use filler matching finish of items being installed.

F. Cabinets: 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 cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.

2. Maintain veneer sequence matching of cabinets with transparent finish.

3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches (400 mm) o.c. with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.

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

1. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are applied in shop.

3.4 COUNTERTOP INSTALLATION

A. Install countertops level to a tolerance of 1/8 inch in 8 feet (3 mm in 2.4 m), 1/4 inch (6 mm) maximum. Do not exceed 1/64-inch (0.4-mm) difference between planes of adjacent units.

B. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Predrill holes for screws as recommended by manufacturer. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

C. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.

D. Secure countertops to subtops with adhesive according to solid surface material manufacturer's written instructions. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

E. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.

1. Install metal splines in kerfs in countertop edges at joints. Fill kerfs with adhesive before inserting splines and remove excess immediately after adjoining units are drawn into position.

2. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned, and joints are of specified width.

F. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.

G. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Fasten by screwing through backing. Predrill holes for screws as recommended by manufacturer.

H. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to

finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.

1. Seal edges of cutouts in particleboard subtops by saturating with varnish.

I. Apply sealant to gaps at walls; comply with Section 07 92 00 "Joint Sealants."

3.5 ADJUSTING AND CLEANING

A. Repair damaged and defective cabinets, 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 cabinets on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION

SECTION 06 41 17 - SOLID SURFACING FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Materials:

a. Solid Surfacing Materials for Countertops (SS-1).

2. Fabrications:

a. Solid surface material fabricated countertops, backsplashes, and end splashes.

B. Related Requirements:

1. Section 06 41 00 “Architectural Casework” for coordination with casework.

2. Division 22 “Plumbing” Sections for coordination with fixtures.

1.3 SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.

1. Show locations and details of joints.

2. Show direction of directional pattern, if any.

C. Samples for Initial Selection: For each type of material exposed to view.

D. Samples for Verification: For the following products:

1. Each type of material, 6 inches (150 mm) square.

2. One full-size solid surface material countertop, with front edge and backsplash, 8 by 10 inches (200 by 250 mm), of construction and in configuration specified.

E. Qualification Data: For fabricator.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For solid surface material fabrications to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

1.5 QUALITY ASSURANCE

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

B. Installer Qualifications: For fabricator.

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects and conformance to design intent, and to set quality standards for fabrication and installation.

1. Build mockup of typical countertop as shown on Drawings.

2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify dimensions of fabrications by field measurements after base cabinets and adjacent fabrications are installed but before countertops or fabrications are complete.

B. Environmental Limitations: Do not deliver or install plastic paneling until spaces are enclosed and weathertight and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.7 COORDINATION

A. Coordinate locations of utilities that will penetrate countertops, backsplashes or other fabrications.

PART 2 - PRODUCTS

2.1 SOLID SURFACE MATERIALS

A. Solid Surfacing Material, Composite Quartz, SS-1: Homogenous solid sheets of quartz complying with material and performance requirements in ANSI Z124.6.

1. Basis-of-Design Products:

a. No. BQ8805 “Cendre” by Pental Quartz; www.pentalquartz.com.

2. Thickness: 1-1/2 inches.

3. Finish: Polished.

B. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

2.2 ACCESSORIES

A. Trim Accessories: Manufacturer's standard vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, outside corners, and caps as needed to conceal edges.

B. Exposed Fasteners: Nylon drive rivets recommended by panel manufacturer.

C. Concealed Mounting Splines: Continuous, H-shaped aluminum extrusions designed to fit into grooves routed in edges of factory-laminated panels and to be fastened to substrate.

D. Adhesive: As recommended by plastic paneling manufacturer.

E. Sealant: Sealant recommended by plastic paneling manufacturer and complying with requirements in Section 07 92 00 "Joint Sealants."

2.3 COUNTERTOP FABRICATION

A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."

1. Grade: Premium.

B. Configuration:

1. Front: Straight, slightly eased at top, with laminated edge, size as indicated in Drawings.

2. Backsplash: Straight, slightly eased at corner.

3. End Splash: Matching backsplash.

C. Countertops: 1/2-inch- (12.7-mm-) thick unless otherwise indicated, solid surface material with front edge built up with same material as indicated in Drawings.

D. Backsplashes: 1/2-inch- (12.7-mm-) thick unless otherwise indicated, solid surface material.

E. Fabricate tops with shop-applied edges and backsplashes unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

F. Joints: Fabricate countertops without joints.

G. Cutouts and Holes:

1. Undercounter Plumbing Fixtures: Make cutouts for fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.

a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting 3/16 inch (5 mm) into fixture opening.

b. Provide vertical edges, rounded to 3/8-inch (10-mm) radius at juncture of cutout edges with top surface of countertop, slightly eased at bottom, and projecting 3/16 inch (5 mm) into fixture opening.

c. Provide 3/4-inch (20-mm) full bullnose edges projecting 3/8 inch (10 mm) into fixture opening.

2. Counter-Mounted Plumbing Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.

3. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.

4. Counter-Mounted Cooktops: Prepare countertops in shop for field cutting openings for cooktops. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to receive solid surface fabrications and conditions under which fabrications will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of fabrications.

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

3.2 COUNTERTOP INSTALLATION

A. Install countertops level to a tolerance of 1/8 inch in 8 feet (3 mm in 2.4 m), 1/4 inch (6 mm) maximum. Do not exceed 1/64-inch (0.4-mm) difference between planes of adjacent units.

B. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Predrill holes for screws as recommended by manufacturer. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

C. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.

D. Secure countertops to subtops with adhesive according to solid surface material manufacturer's written instructions. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

E. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.

F. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Fasten by screwing through backing. Predrill holes for screws as recommended by manufacturer.

G. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.

1. Seal edges of cutouts in particleboard subtops by saturating with varnish.

H. Apply sealant to gaps at walls; comply with Section 07 92 00 "Joint Sealants."

END OF SECTION

.SECTION 07 84 13 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Penetrations in fire-resistance-rated walls.
2. Penetrations in horizontal assemblies.
3. Penetrations in smoke barriers.
4. Delegated design.

B. Related Requirements:

1. Section 01 61 16 “Delegated Design Requirements”.
2. Section 07 92 00 “Joint Sealants” for non-fire-resistant joint sealants.

1.3 SUBMITTALS

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

B. Product Schedule: For each penetration firestopping system. Include location and design designation of qualified testing and inspecting agency:

1. Engineering Judgments: Where Project conditions require modification to a qualified testing agency's illustration for a particular joint firestopping system condition, submit illustration, with modifications marked, approved by joint firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

C. Qualification Data: For Installer.

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

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements." Experience shall include installing penetration firestopping similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer's willingness to sell its penetration firestopping products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.

B. Fire-Test-Response Characteristics: Penetration firestopping shall comply with the following requirements:

1. Penetration firestopping tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.

2. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems complying with the following requirements:

a. Penetration firestopping products bear classification marking of qualified testing and inspecting agency.

b. Classification markings on penetration firestopping correspond to designations listed by the following:

1) UL in its "Fire Resistance Directory."

2) FM Global in its "Building Materials Approval Guide."

C. Preinstallation Conference: Conduct conference at Project site.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Do not install penetration firestopping when ambient or substrate temperatures are outside limits permitted by penetration firestopping manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.

B. Install and cure penetration firestopping per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.6 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping.

C. Notify Owner's testing agency at least seven days in advance of penetration firestopping installations; confirm dates and times on day preceding each series of installations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Approved Manufacturers:

1. Hilti; www.hilti.com.

2. Specified Technologies, Inc.; www.stifirestop.com.

3. 3M; www.3m.com.

2.2 PERFORMANCE REQUIREMENTS

A. General: For penetrations through the following 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.

1. Fire-resistance-rated load-bearing walls, including partitions, with fire-protection-rated openings.

2. Fire-resistance-rated non-load-bearing walls, including partitions, with fire-protection-rated openings.

3. Fire-resistance-rated floor assemblies.

B. Delegated Design: Engage a qualified installer as defined in Quality Assurance Article above and as defined in Section 01 61 16 “Delegated Design Requirements” to select and provide penetration firestop assemblies.

C. Rated Systems: Provide through-penetration firestop systems with the following ratings determined per ASTM E 814:

1. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.

2. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:

a. Penetrations located outside wall cavities.

b. Penetrations located outside fire-resistance-rated shaft enclosures.

c. Penetrations located in construction containing fire-protection-rated openings.

d. Penetrating items larger than 100-mm-diameter nominal pipe or 100 sq. cm in overall cross-sectional area.

D. 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.

1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.

2. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.

3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

E. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

F. 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."

1. Comply with low-emitting requirements in Section 01 81 13 “Sustainability Requirements”.

2. VOC Content: Penetration firestopping sealants and sealant primers shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

a. Sealants: 250 g/L.

b. Sealant Primers for Nonporous Substrates: 250 g/L.

c. Sealant Primers for Porous Substrates: 775 g/L.

2.3 PENETRATION FIRESTOPPING

A. Provide penetration firestopping that is 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. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.

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.

1. Fire-resistance-rated walls include fire walls.

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.

1. Horizontal assemblies include floors.

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. of penetration opening at 0.30-inch wg at both ambient and elevated temperatures.

E. Fire Blocking in Walls: Provide firestopping caulk where gaps between fire blocking and adjacent assembly materials exceed Code-allowances.

1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.

F. W-Rating: Provide penetration firestopping showing no evidence of water leakage when tested according to UL 1479.

G. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.

1. Permanent forming/damming/backing materials, including the following:

a. Slag-wool-fiber or rock-wool-fiber insulation.

b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.

c. Fire-rated form board.

d. Fillers for sealants.

2. Temporary forming materials.

3. Substrate primers.

4. Collars.

5. Steel sleeves.

2.4 FILL MATERIALS

A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer metallic sleeve lined with an intumescent strip, a radial extended flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.

B. Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.

C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized-steel sheet.

E. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.

F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.

G. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

H. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.

I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:

1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and nonsag formulation for openings in vertical and sloped surfaces, unless indicated firestopping limits use of nonsag grade for both opening conditions.

2.5 MIXING

A. For those products requiring mixing before application, comply with penetration firestopping 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 the Work.

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

3.2 PREPARATION

A. Surface Cleaning: Clean out openings immediately before installing penetration firestopping to comply with 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 penetration firestopping.

2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping. Remove loose particles remaining from cleaning operation.

3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by 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 penetration firestopping from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing firestopping's seal with substrates.

3.3 INSTALLATION

A. General: Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming 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.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.

C. Install fill materials for firestopping 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 the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."

2. Contractor's name, address, and phone number.

3. Designation of applicable testing and inspecting agency.

4. Date of installation.

5. Manufacturer's name.

6. Installer's name.

3.5 FIELD QUALITY CONTROL

A. Owner will engage a qualified testing agency to perform tests and inspections.

B. Where deficiencies are found or penetration firestopping is damaged or removed because of testing, repair or replace penetration firestopping to comply with requirements.

C. Proceed with enclosing penetration firestopping with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping 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 penetration firestopping is without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping and install new materials to produce systems complying with specified requirements.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Nonstaining silicone joint sealants.
3. Urethane joint sealants.
4. Immersible joint sealants.
5. Mildew-resistant joint sealants.
6. Latex joint sealants.

B. Related Requirements:

1. Section 09 29 00 “Gypsum Board” for acoustical sealant.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Product Test Reports: For each kind of joint sealant, for tests performed by a qualified testing agency.

D. Preconstruction Laboratory 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 are needed for adhesion.

E. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

F. Field-Adhesion-Test Reports: For each sealant application tested.

G. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: Qualified according to ASTM C1021 to conduct the testing indicated.

1.6 PRECONSTRUCTION TESTING

A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Adhesion Testing: Use ASTM C794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.

2. Compatibility Testing: Use ASTM C1087 to determine sealant compatibility when in contact with glazing and gasket materials.

3. Stain Testing: Use ASTM C1248 to determine stain potential of sealant when in contact with porous substrates.

4. Submit manufacturer's recommended number of pieces of each type of material, including joint substrates, joint-sealant backings, and miscellaneous materials.

5. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.

6. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures, including use of specially formulated primers.

7. Testing will not be required if joint-sealant manufacturers submit data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, staining of, and compatibility with joint substrates and other materials matching those submitted.

1.7 FIELD 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.

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.

1.8 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace 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 agrees to furnish joint sealants to repair or replace those joint sealants 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 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 PERFORMANCE REQUIREMENTS

A. All openings, gaps, and joints in floor and wall assemblies in contact with soil and at gaps around pipes, toilets, bathtubs, or drains penetrating these assemblies shall be filled or closed with materials that provide a permanent air-tight seal.

B. Only smaller gaps shall be sealed with elastomeric joint sealant, as defined by ASTM C 920; maximum joint width as recommended by sealant manufacturer.

1. Large openings shall not be sealed with elastomeric joint sealant, but rather with nonshrink grout or expanding foam materials.

C. Physical properties of elastomeric joint sealants shall meet requirements of Radon Mitigation System as indicated in the Drawings.

2.2 JOINT SEALANTS, 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 joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C1248.

B. Silicone, S, NS, 100/50, NT (SEALANT): Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Use NT.

1. Basis-of-Design Product: Dow Corning 790 by Dow Corning Corp.; www.dowcorning.com.

2. Other Approved Manufacturers:

a. GE Construction Sealants; Momentive Performance Materials Inc.; www.siliconeforbuilding.com.

3. Applications:

a. Non-porous dissimilar materials.

b. Joints: 3/8 inch wide or less.

C. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.

1. Approved Manufacturers:

a. Dow Corning Corporation; www.dowcorning.com.

b. GE Construction Sealants; Momentive Performance Materials Inc.; www.siliconeforbuilding.com.

c. Sika Corporation; www.sika.com.

2. Applications: Similar materials.

D. Silicone, Nonstaining, S, NS, 100/50, NT: Nonstaining, single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Use NT.

1. Approved Manufacturers:

a. Sika Corporation; www.sika.com.

b. Tremco Incorporated; www.tremco.com.

2. Applications: Porous exterior substrates.

E. Silicone, Nonstaining, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Basis-of-Design Product: 758 Silicone Weather Barrier Sealant by Dow Corning; www.dowcorning.com.

2. Application: Sealing weather barrier materials and adjacent surfaces where low movement is anticipated.

F. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.

1. Approved Manufacturers:

a. Dow Corning Corporation; www.dowcorning.com.

b. GE Construction Sealants; Momentive Performance Materials Inc.; www.siliconeforbuilding.com.

c. Sika Corporation; www.sika.com.

d. Tremco Incorporated; www.tremco.com.

2. Applications: At expansion and control joints, precast concrete panel joints, perimeter caulking, aluminum, masonry and vinyl siding.

2.4 URETHANE JOINT SEALANTS

A. Urethane, S, NS, 100/50, T, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Uses T and NT, uses NT, M, A, O and I (Class 2).

1. Approved Manufacturers:

a. Sika Corporation; www.sika.com.

2. Applications: At expansion and control joints, precast concrete panel joints, perimeter caulking, aluminum, masonry and vinyl siding.

B. Urethane, M, P, 50, T, NT: Multicomponent, pourable, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade P, Class 50, Uses T and NT.

1. Approved Manufacturers:

a. LymTal International Inc.; www.lymtal.com.

2. Applications: Exterior paintable surfaces and exterior and interior horizontal concrete joints.

C. Urethane, M, P, 25, T, NT: Multicomponent, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade P, Class 25, Uses T and NT.

1. Approved Manufacturers:

a. BASF Corporation; www.basf.com.

2. Applications: General.

2.5 IMMERSIBLE JOINT SEALANTS

A. Immersible Joint Sealants. Suitable for immersion in liquids; ASTM C1247, Class 2; tested in deionized water unless otherwise indicated

B. Urethane, Immersible, S, NS, 100/50, NT, I: Immersible, single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Uses NT, and I.

1. Approved Manufacturers:

a. Tremco Incorporated; www.tremco.com.

2.6 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Approved Manufacturers:

a. Dow Corning Corporation; www.dowcorning.com.

b. GE Construction Sealants; Momentive Performance Materials Inc.; www.siliconeforbuilding.com.

c. Tremco Incorporated; www.tremco.com.

2. Applications: At joints in ceramic tile walls and floor, around equipment and around plumbing fixtures.

2.7 BUTYL JOINT SEALANTS

A. Butyl-Rubber-Based Joint Sealants: ASTM C1311.

1. Approved Manufacturers:

a. Pecora Corporation; www.pecora.com.

b. Tremco Incorporated; www.tremco.com.

2. Applications: At curtainwall joints, metal panel joining, bedding thresholds, secondary glazing seals, and areas where a seal is required against EPDM gaskets.

2.8 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

1. Basis-of-Design Product: Tremco Acrylic Latex Caulk by Tremco.

2. Applications: At interior frames/ walls.

2.9 LOW EXPANDING FOAM SEALANTS

A. Low expanding, one-component, polyurethane foam sealant, curing to a semi-rigid, closed cell urethane foam.

1. Applications:

a. Apply between top of precast concrete panels and metal framing.

b. Miscellaneous openings and voids in exterior walls.

2.10 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 C1330, Type C (closed-cell material with a surface skin) and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 25 deg F (minus 32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

D. 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. Provide self-adhesive tape where applicable.

2.11 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 performance of the Work.

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, 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 the following:

    a. Concrete.

    b. Masonry.

    c. Unglazed surfaces of ceramic tile.

    d. Exterior insulation and finish systems.

3. Remove laitance and form-release agents from concrete.

4. Clean nonporous joint substrate 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:

    a. Metal.

    b. Glass.

    c. Porcelain enamel.

    d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by 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 or primer 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 C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind 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 in subparagraphs 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 PATCHING VOIDS

A. Installation procedures of elastomeric joint sealants shall meet requirements of Radon Mitigation System as indicated in the Drawings.

B. At above-grade applications, inject elastomeric joint sealants into all smaller openings, gaps, and joints in floor and wall assemblies in contact with soil and at gaps around all pipes, toilets, bathtubs, or drains penetrating these assemblies so no voids remain and to provide a permanent air-tight seal.

C. Where appropriate, larger gaps shall be sealed with nonshrink grout or expanding foam.

3.5 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 10 tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.

b. Perform one test for each 1000 feet (300 m) 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.

3.6 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.

3.7 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, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Interior hollow metal doors and frames.

B. Related Requirements:

1. Section 08 14 16 “Flush Wood Doors”.
2. Section 08 71 00 "Door Hardware" for door hardware for hollow-metal doors.
3. Section 08 80 00 "Glazing" for glazing products for door vision panels and sidelites.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.
9. Details of conduit and preparations for power, signal, and control systems.

C. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

D. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

E. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

1. Smoke- and Draft-Control Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.

B. Fire-Rated, Borrowed-Lite Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

C. Sound-Control Doors: Assemblies tested in a laboratory for sound-transmission-loss performance according to ASTM E90, calculated according to ASTM E413, and rated for not less than the STC value indicated.

2.2 MANUFACTURERS

A. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

B. Basis-of-Design Manufacturers:

1. Ceco Door, div. of Assa Abloy; www.cecodoor.com.

2. Curries Company, div. of Assa Abloy; www.curries.com.

3. Steelcraft; div. of Allegion; www.allegion.com.

2.3 INTERIOR DOORS AND FRAMES

A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Standard-Duty Doors and Frames: SDI A250.8, Level 1. At interior locations indicated in the Door and Frame Schedule.

1. Physical Performance: Level C according to SDI A250.4.

2. Doors:

a. Type: As indicated in the Door and Frame Schedule.

b. Thickness: 1-3/4 inches.

c. Face: Uncoated, cold-rolled steel sheet, minimum thickness of 0.032 inch.

d. Edge Construction: Model 1, Full Flush.

e. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core at manufacturer's discretion.

3. Frames:

a. Materials: Uncoated, cold-rolled steel sheet, minimum thickness of 0.042 inch.

b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.

c. Construction: Full profile welded.

4. Finish: Factory-primed; field-painted.

2.4 BORROWED LITES

A. Hollow-metal frames of uncoated steel sheet, minimum thickness of 0.053 inch.

1. Construction: Full profile welded.

2.5 GLAZED INTERIOR PARTITIONS

A. Hollow-metal frames of uncoated steel sheet, minimum thickness of 0.053 inch.

1. Construction: Full profile welded.

2. Provide interior hollow metal frames for glazed interior partitions with structural sealant glazed verticals as indicated.

2.6 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.

2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.

3. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.

4. Post-installed Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows:

1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

2.7 MATERIALS

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

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

D. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.

E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

G. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.

H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

I. Glazing: Comply with requirements in Section 08 80 00 "Glazing."

J. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.8 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:

1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.

2. Fire Door Cores: As required to provide fire-protection and temperature-rise ratings indicated.

3. Vertical Edges for Single-Acting Doors: Provide beveled or square edges at manufacturer's discretion.

4. Top Edge Closures: Close top edges of doors with inverted closures.

5. Bottom Edge Closures: Close bottom edges of doors with end closures or channels of same material as face sheets.

6. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.

2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.

4. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.

5. Jamb Anchors: Provide number and spacing of anchors as follows:

a. Masonry Type: Locate anchors not more than 16 inches from top and bottom of frame. Space anchors not more than 32 inches o.c., to match coursing, and as follows:

1) Two anchors per jamb up to 60 inches high.

2) Three anchors per jamb from 60 to 90 inches high.

3) Four anchors per jamb from 90 to 120 inches high.

4) Four anchors per jamb plus one additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 120 inches high.

b. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

1) Three anchors per jamb up to 60 inches high.

2) Four anchors per jamb from 60 to 90 inches high.

3) Five anchors per jamb from 90 to 96 inches.

4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 96 inches high.

c. Compression Type: Not less than two anchors in each frame.

d. Post-installed Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.

6. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

7. Terminated Stops: Terminate stops 6 inches above finish floor with a 45-degree angle cut, and close open end of stop with steel sheet closure. Cover opening in extension of frame with welded-steel filler plate, with welds ground smooth and flush with frame.

D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.

E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

F. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.

2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.

3. Provide fixed frame moldings on secure side of interior doors and frames.

4. Provide loose stops and moldings on inside of hollow-metal work.

5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.9 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

a. Coordination: Section 09 91 00 “Painting”.

2.10 ACCESSORIES

A. Louvers: Provide louvers for interior doors, where indicated, which comply with SDI 111C, with blades or baffles formed of 0.020-inch- (0.5-mm-) thick, cold-rolled steel sheet set into 0.032-inch-thick steel frame.

1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.

2. Fire-Rated Automatic Louvers: Louvers constructed with movable blades closed by actuating fusible link, and listed and labeled for use in fire-rated door assemblies of type and fire-resistance rating indicated by same qualified testing and inspecting agency that established fire-resistance rating of door assembly.

B. Mullions Bars: Join to adjacent members by welding or rigid mechanical anchors.

C. Grout Guards: Formed from same material as frames, not less than 0.016 inch (0.4 mm) thick.

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 the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

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

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

B. Hollow-Metal Frames: Install hollow-metal frames for doors, transoms, sidelites, borrowed lites, and other openings, of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

a. At fire-rated openings, install frames according to NFPA 80.

b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.

c. Install frames with removable stops located on secure side of opening.

d. Install door silencers in frames before grouting.

e. Remove temporary braces necessary for installation only after frames have been properly set and secured.

f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.

a. Floor anchors may be set with power-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on Shop Drawings.

3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.

4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.

5. In-Place Concrete or Masonry Construction: Secure frames in place with post-installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.

6. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.

c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors:

a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.

b. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.

c. At Bottom of Door: 3/4 inch plus or minus 1/32 inch.

d. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

3. Smoke-Control Doors: Install doors and gaskets according to NFPA 105.

D. Glazing: Comply with installation requirements in Section 08 80 00 "Glazing" and with hollow-metal manufacturer's written instructions.

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow-metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Flush wood doors, including fire-rated and non-rated.

B. Related Requirements:

1. Section 08 71 00 “Door Hardware”.
2. Section 09 22 16 “Non-Structural Metal Framing” for coordination with framing and for blocking.

1.3 SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge construction] and trim for openings. 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; location and extent of hardware blocking; and other pertinent data.

1. Indicate doors to be factory finished and finish requirements.
2. Indicate fire ratings for fire doors.

C. Samples for Initial Selection: Color charts consisting of actual materials in small sections for the following:

1. Faces of Factory-Finished Doors: Show the full range of colors available for stained and opaque finishes.

D. Samples for Verification:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.
2. 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. Finish sample with same materials proposed for factory-finished doors.
3. Louver blade and frame sections, 6 inches long, for each material and finish specified.
4. Frames for light openings, 6 inches long, for each material, type, and finish required.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.

B. Quality Standard: Comply with AWI's "Architectural Woodwork Quality Standards Illustrated."

1. Provide AWI Quality Certification Labels or an AWI letter of licensing for Project indicating that doors comply with requirements of grades specified.

C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252.

1. Test Pressure: After five minutes into the test, the neutral pressure level in furnace shall be established at 6 inches or less above the sill.

2. Oversize, Fire-Rated Wood Doors: For door assemblies exceeding sizes of tested assemblies, provide oversize fire door label or certificate of inspection, from a testing and inspecting agency acceptable to authorities having jurisdiction, stating that doors comply with requirements of design, materials, and construction.

3. Temperature-Rise Rating: At exit enclosures, provide doors that have a temperature-rise rating of 250 deg C maximum in 30 minutes of fire exposure.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section “Contractor’s Quality Control.”

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in cardboard cartons and wrap bundles of doors in plastic sheeting package and deliver as required.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install doors 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. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 16 and 32 deg C and relative humidity between 43 and 70 percent during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 FLUSH WOOD DOORS, GENERAL

A. All Composite Wood products shall be made using ultra-low-emitting formaldehyde (ULEF) resins as defined in the California Air Resources Board's "Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products" (CARB Phase II) or shall be made with no added formaldehyde (NAF).

B. Quality Standard: In addition to requirements specified, comply with AWI's, AWMAC's, and WI's "Architectural Woodwork Standards.

C. WDMA I.S.1-A Performance Grade: Heavy-Duty unless otherwise indicated.

D. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

E. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control, based on testing according to UL 1784.

F. Particleboard-Core Doors: Not permitted unless otherwise indicated.

G. Structural-Composite-Lumber-Core Doors:

1. Structural Composite Lumber: WDMA I.S.10.
    a. Screw Withdrawal, Face: 700 lbf (3100 N).
    b. Screw Withdrawal, Edge: 400 lbf (1780 N).

2.2 MANUFACTURERS

A. Acceptable Manufacturers:

1. Algoma Hardwoods; www.algomahardwoods.com.
2. Greendoor by Lynden Door; www.lyndendoor.com.
3. Humabuilt; www.humabuilt.com.
4. Oregon Door; www.oregondoor.com.
5. Vancouver Door; www.vancouverdoorco.com.
6. VT Industries; www.vtindustries.com.

2.3 SOLID-CORE DOORS

A. Interior Wood Doors, WD-A: Existing, salvaged wood doors, relocated as indicated in Drawings.

B. Interior Wood Doors, WD-B:

1. Architectural Woodwork Standards Grade: Premium.
2. Performance Grade: ANSI/WDMA I.S. 1A Heavy Duty.
3. Transparent Finish Doors:
    a. Species: Maple.
    b. Cut: Sliced to match existing.
    c. Match between Veneer Leaves: Book match to match existing, as approved by Architect.
    d. Assembly of Veneer Leaves on Door Faces: To match existing.
    e. Pair and Set Match: Pair match each pair; set match pairs within 10 feet of each other when doors are closed.
    f. Room Match: Match door faces within each separate room or area of building. Corridor-door faces do not need to match where they are separated by 10 feet or more.
4. Exposed Vertical and Top Edges: Match face.
5. Core: Either glued or nonglued block or WDMA I.S. 10 structural composite lumber.
    a. Particle board is acceptable for non-bathroom spaces and closets.
6. Core for Fire-Rated Doors: As required to achieve fire-protection rating indicated on Drawings.
7. Construction: Five plies, hot-pressed, bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.
8. Thick: 1 3/4 inches unless otherwise indicated.
9. Frames, at Pre-hung Units: Any closed-grain hardwood of mill option; manufacturer's standard for product selected by Architect.

C. Fire-Rated Doors Construction: Provide fire-rating as scheduled.

1. Construction: Construction and core specified above for type of face indicated or manufacturer's standard mineral-core construction as needed to provide fire rating indicated.

2. Blocking: For mineral-core doors, provide composite blocking with improved screw-holding capability approved for use in doors of fire ratings indicated as needed to eliminate through-bolting hardware.

3. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile matching face veneer, and laminated backing at hinge stiles for improved screw-holding capability and split resistance.

4. Pairs: Provide fire-rated pairs with fire-retardant stiles matching face veneer that are labeled and listed for kinds of applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals.

2.4 FABRICATION

A. Fabricate 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:

1. Comply with clearance requirements of referenced quality standard for fitting. Comply with requirements in NFPA 80 for fire-rated doors.

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.

1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.

2. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.

3. Metal Astragals: Pre-machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

2.5 FACTORY FINISHING

A. Comply with referenced quality standard for factory finishing.

1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

2. Finish faces, all four edges, edges of cutouts, and mortises.

B. Factory finish doors that are indicated on Drawings to receive transparent finish.

C. Doors for Opaque Finish: Factory prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer specified in Section 09 91 00 “Painting”.

D. Transparent Finish:

1. Architectural Woodwork Standards or ANSI/WDMA I.S. 1A Grade: Premium.

2. Finish: Architectural Woodwork Standards System-10, UV Curable, Water Based.

3. Staining: None required.

4. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames before hanging doors.

1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.

2. Reject doors with defects.

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

3.2 INSTALLATION

A. Hardware: For installation, see Division 08 Sections "Door Hardware."

B. Manufacturer's Written Instructions: Install doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.

1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.

C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.

1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold.

a. Comply with NFPA 80 for fire-rated doors.

2. Bevel non-fire-rated doors 3-1/2 degrees at lock and hinge edges.

D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

E. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. 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

THIS PAGE INTENTIONALLY BLANK

SECTION 08 31 13 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Access doors and frames (AP-1).
2. Fire-rated access doors and frames (AP-2).

B. Related Requirements:

1. Division 22 “Plumbing” Sections for coordination with plumbing components.
2. Division 23 “Heating, Ventilation and Air-Conditioning (HVAC)” Sections for coordination with HVAC components.

1.3 SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, fire ratings, material descriptions, dimensions of individual components and profiles, and finishes.

B. Product Schedule: For access doors and frames. Use same designations indicated on Drawings.

C. Qualification Data: For testing and inspecting agency.

1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.
2. Submit copy of DHI Fire and Egress Door Assembly Inspector (FDAI) certificate.

D. Record Documents: For fire-rated doors, list of applicable room name and number in which access door is located.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

1. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   a. Acudor Products, Inc.; www.acudor.com.
   b. Babcock-Davis; www.babcockdavis.com.
   c. Karp Associates, Inc.; www.karpinc.com.
   d. Mifab, Inc.; www.mifab.com.
   e. Milcor; div. of Hart & Cooley, Inc.; www.milcorinc.com.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Access Doors and Frames: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection and temperature-rise limit ratings indicated, according to NFPA 252 or UL 10B.

2.3 ACCESS DOORS AND FRAMES

A. Access Door, AP-1:

1. Basis-of-Design Product: No. DW-5058 by Acudor Products Inc.; www.acudor.com.
2. Description: Door face recessed 1/2 inch with concealed flanges:
    a. Gypsum board infill for interior GWB wall locations.
    b. Finish: Paint access panels to match adjacent surface.
3. Door Size:
    a. Where the equipment or device is less than 18 in. from the finished ceiling: Minimum 18 by 18 in.
    b. Where the equipment or device is more than 18 in. from the finished ceiling and where equipment or device has a panel or door that needs to be opened or removed for service: Minimum 24 by 24 in.
4. Frame Material: Same material and thickness as door.
5. Latch and Lock: Cam latch, screwdriver operated.

B. Access Door, Fire-Rated, AP-2:

1. Basis-of-Design Product: No. DW-5058 by Acudor Products Inc.; www.acudor.com.
2. Description: Door face recessed 1/2 inch with concealed flanges:
    a. Fire-rated 5/8 in. gypsum board infill for interior GWB ceiling and soffit locations.
    b. Finish: Paint access panels to match adjacent surface.
3. Door Size:
    a. Where the equipment or device is less than 18 in. from the finished ceiling: Minimum 18 by 18 in.
    b. Where the equipment or device is more than 18 in. from the finished ceiling and where equipment or device has a panel or door that needs to be opened or removed for service: Minimum 24 by 24 in.
4. At Fire-Rated Locations:
    a. Fire-Resistance Rating: Not less than indicated for fire-rated assembly.
    b. Temperature-Rise Rating: 450 deg F or 250 deg F at the end of 30 minutes, as required.
5. Frame Material: Same material and thickness as door.
6. Latch and Lock: Cam latch, screwdriver operated.

2.4 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A879/A879M, with cold-rolled steel sheet substrate complying with ASTM A1008/A1008M, Commercial Steel (CS), exposed.

C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

D. Stainless Steel Plate, Sheet, and Strip: ASTM A240/A240M or ASTM A666, Type 316. Remove tool and die marks and stretch lines, or blend into finish.

E. Stainless Steel Flat Bars: ASTM A666, Type 316. Remove tool and die marks and stretch lines, or blend into finish.

F. Aluminum Extrusions: ASTM B221/B221M, Alloy 6063.

G. Aluminum Sheet: ASTM B209/B209M, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

H. Frame Anchors: Same material as door face.

I. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.

2.5 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.

1. For concealed flanges with drywall bead, provide edge trim for gypsum panels securely attached to perimeter of frames.

2. For concealed flanges with plaster bead for full-bed plaster applications, provide zinc-coated expanded-metal lath and exposed casing bead welded to perimeter of frames.

D. Recessed Access Doors: Form face of panel to provide recess for application of applied finish. Reinforce panel as required to prevent buckling. Provide access sleeves for each latch operator and install in holes cut through finish.

1. For recessed doors with plaster infill, provide self-furring expanded-metal lath attached to door panel.

E. Latch and Lock Hardware:

1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.

2. Keys: Furnish two keys per lock and key all locks alike.

F. Aluminum: After fabrication, apply manufacturer's standard protective coating on aluminum that will come in contact with concrete.

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 finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

1. Factory Primed: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

E. Stainless Steel Finishes:

1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

2. Interior Locations, Polished Finish: ASTM A480/A480M No. 4 finish. Grind and polish surfaces to produce uniform finish, free of cross scratches.

a. Run grain of directional finishes vertical.

b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

3.3 FIELD QUALITY CONTROL

A. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

B. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

C. Prepare and submit separate inspection report for each fire-rated access door indicating compliance with each item listed in NFPA 80 and NFPA 101.

3.4 ADJUSTING

A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION

SECTION 08 71 00 – DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Work under this section includes the complete finish hardware requirements for the project. Quantities listed are for the contractor's convenience only and are not guaranteed. Items not specifically mentioned, but necessary to complete the work shall be furnished, matching the items specified in quality and finish.

B. Related Sections:

1. Section 08 11 13 "Hollow Metal Doors and Frames".
2. Section 08 14 00 "Flush Wood Doors".

1.3 QUALITY ASSURANCE

A. Product Qualification:

1. To assure a uniform high quality of materials for the project, it is intended that only specified items be furnished. Comparable products may be accepted upon prior approval of architect.
2. Hardware to be new, free of defects, blemishes and excessive play. Obtain each kind of hardware (Mechanical latch and locksets, exit devices, hinges and closers) from one manufacturer except where specified.
3. Fire-Rated opening in compliance with NFPA80. Hardware UL10C/UBC-7-2 (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved bearing hinges and smoke seal. Furnish openings complete.

B. Supplier Qualifications:

1. Hardware supplier will be a direct factory contract supplier who employs a certified Architectural Hardware Consultant (AHC) available at all reasonable times during the course of the work for project hardware consultation to owner, architect and contractor.
2. Supplier will be responsible for detailing, scheduling and ordering of finish hardware.
3. Conduct pre-installation conference at jobsite. Initiate and conduct with supplier, installer and related trades. Coordinate materials and techniques and sequence complex hardware items and systems installation.

C. Installer Qualifications:

1. Installer to have not less than 3 years experience specializing in installation of work in this section. Company must maintain qualified personnel trained and experienced in installing hardware.

1.4 REFERENCES

A. NFPA80 – Fire Doors and Windows

B. NFPA101 – Life Safety Code

C. NFPA105 – Smoke and Draft Control Door Assemblies

D. ANSI A117.1–Accessible and Usable Buildings and Facilities

1.5 SUBMITTALS

A. Hardware schedule: Submit digital copies of schedule. Organize vertically formatted schedule into Hardware Sets with index of doors and headings, indication complete designations of every item required for each door or opening. Include the following:

1. Type, style, function, size, quantity and finish of hardware items.
2. Name, part number and manufacture of each item.
3. Fastenings and other pertinent information.
4. Explanation of abbreviations, symbols and codes contained in schedule.
5. Door and frame sizes, materials and degrees of swing.

B. Product Data: Submit digital copies for each product indicated.

C. Templates: Obtain and distribute templates for doors, frames, and other works specified to be prepared for installing door hardware.

D. Wiring/Riser diagrams: As required for electric hardware indicated.

E. Maintenance Data: For each type of door hardware to include in maintenance manuals specified in Division 1.

F. Samples: Upon request submit material samples.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle and protect products to project site under provisions of Division 1 and as specified herein.

B. Tag each item or package separately, with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

1.7 WARRANTY

A. The finish hardware shall have a limited warranty against defects in workmanship and operation for a period of one year from date of substantial completions and the following items are as shown:

1. Closers: Thirty years mechanical, two years electrical.
2. Exit Devices: Three years mechanical, one year electrical.
3. Locksets: Five years mechanical, one year electrical.

PART 2 - PRODUCTS

2.1 MATERIAL AND FABRICATION

A. Provide all door hardware for complete work, in accordance with the drawings and as specified herein.

B. Provide items and quantities not specifically mentioned to ensure a proper and complete operational installation.

2.2 MANUFACTURERS

A. Approval of products from manufacturers indicated as “Acceptable Manufacturer” is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer’s product.

ITEM	SCHEDULED MANUFACTURER	OTHER ACCEPTABLE MANUFACTURER
Hinges	Ives (IVE)	Bommer, Stanley
Power Transfers	Von Duprin (VON)	None - Owner Standard
Flush Bolts & Coordinators	Ives (IVE)	None - Owner Standard
Locksets & Deadlocks	Schlage (SCH)	Best Lock
Exit Devices & Mullions	Von Duprin (VON)	None - Owner Standard
Electric Strikes	Von Duprin (VON)	None - Owner Standard
Power Supplies	Schlage Electronics (SCE)	Von Duprin (VON)
Cylinders & Keying	Best (BES)	None - Owner Standard
Door Closers	LCN (LCN)	None - Owner Standard
Automatic Operators	LCN (LCN)	Horton
Door Trim	Ives (IVE)	None - Owner Standard
Flush Cup Pulls	Trimco (TRI)	Rockwood
Protection Plates	Ives (IVE)	Tice, Trimco
Overhead Stops	Glynn-Johnson (GLY)	Rixson
Thresholds & Weatherstrip	Zero (ZER)	Pemko, NGP
Single Restroom Electronics	Camden (CAM)	None - Owner Standard
Transom Window Operator	Van Dyke’s (VAN)	None

2.3 HANGING

A. Conventional Hinges: Hinge open width minimum, but of sufficient throw to permit maximum door swing. Steel or stainless steel pins:

1. Three hinges per leaf to 7 feet, 6-inch height. Add one for each additional 30 inches in height or any fraction thereof.
2. Provide 4-1/2 x 4-1/2 for 1-3/4 inch thick doors up to 35 inches. Provide heavy weight 5 x 4-1/2for 1-3/4 inch thick doors 36 inches and over.
3. Outswinging locked doors to have non removable (NRP) pins.
4. Pin tips, flat button, finish to match leaves.
5. Doors over 36 inches: Heavy weight.
6. Doors up to 36 inches: Standard weight.

2.4 LOCKSETS, LATCHSETS, DEADBOLTS

A. Heavy Duty Mortise Locks and Latches: [Owner standard].

1. Provide mortise locks certified as ANSI A156.13, Grade 1 Operational, Grade 1 Security.
2. Provide lock case that is multi-function and field reversible for handing without opening case, and manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance.

3. Provide locks with standard 2-3/4 inches (70 mm) backset with full 3/4 inch (19 mm) throw stainless steel mechanical anti-friction latchbolt. Provide deadbolt with full 1 inch (25 mm) throw, constructed of stainless steel.

4. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.

5. Provide electrified options as scheduled in the hardware sets. Provide electrified locksets with micro switch (RX) option that monitors retractor crank, and is actuated when rotation of inside or outside lever rotates retractor hub. Provide normally closed contacts or normally open contacts as required by security system. Electrified locksets shall be included with connecting cables from the lock to the frame side of the power transfer.

6. Lever Trim: Solid brass, bronze, or stainless steel, cast or forged in design specified, with wrought roses and external lever spring cages. Provide thru-bolted levers with 2-piece spindles.

    a. Lever Design: Owner standard.

2.5 EXIT DEVICES

A. Panic and Fire Rated Exit Devices: Owner standard.

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1, AND UL listed for Panic Exit or Fire Exit Hardware.

2. Provide touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.

3. Quiet Operation: Incorporate fluid damper or other device that eliminates noise of exit device operation.

4. Touchpad: Extend minimum of one half of door width, but not the full length of exit device rail. Provide end-cap with two-point attachment to door. Provide compression springs in devices, latches, and outside trims or controls; tension springs prohibited.

5. Provide exit devices with manufacturer’s approved strikes.

6. Provide exit devices cut to door width and height. Locate exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.

7. Mount mechanism case flush on face of doors, or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.

8. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion that is removed by use of a keyed cylinder, which is self-locking when re-installed.

9. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.

10. Provide electrified options as scheduled in the hardware sets. Electrified exit devices shall be included with connecting cables from the exit device to the frame side of the power transfer.

11. Where lever handles are specified as outside trim for exit devices, provide heavy-duty lever trims with forged or cast escutcheon plates. Provide vandal-resistant levers that will travel to 90-degree down position when more than 35 pounds of torque are applied, and which can easily be re-set.

    a. Lever Style: Match lever style of locksets.

2.6 ELECTRIC STRIKES

A. Manufacturers and Products:

1. Provide electric strikes designed for use with type of locks shown at each opening.
2. Provide electric strikes UL Listed as burglary-resistant.
3. Where required, provide electric strikes UL Listed for fire doors and frames.
4. Provide fail-secure type electric strikes, unless specified otherwise.
5. Coordinate voltage and provide transformers and rectifiers for each strike as required.

2.7 KEYS, KEYING, AND KEY CONTROL

A. Refer to Keying Requirements article below.

2.8 CLOSERS

A. Surface Closers: Owner standard.

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
3. Cylinder Body: 1-1/2 inch (38 mm) diameter with 3/4 inch (19 mm) diameter double heat-treated pinion journal.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.9 AUTOMATIC OPERATORS

A. Electric automatic operator:

1. Provide low energy automatic operator units that are electrically powered complying with ANSI/BHMA A156.19.

2. Provide units with conventional door closer opening and closing forces unless power operator motor is activated. Provide door closer assembly with adjustable spring size, back-check, and opening and closing speed adjustment valves to control door:

   a. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.

   b. Power: Continuously adjustable over full range of closer sizes, with reduced opening force for physically handicapped.

   c. Regulation: By tamper-proof, non-critical valves. Provide closers with separate adjustment for latch speed, general speed, and backcheck.

3. Provide separate conduits to carry high and low voltage wiring in compliance with National Electric Code, section 725-31.

4. Provide operator designed to prevent damage to mechanism if system is actuated while door is latched or if door is forced closed during opening cycle.

5. Locate power unit and exhaust away from door to minimize noise and vibration in pedestrian areas.

6. Provide drop plates, brackets, or adapters for arms as required for details.

7. Provide hard-wired actuator switches for operation as specified. Provide weather-resistant actuators at exterior applications.

2.10 OTHER HARDWARE

A. Door stops: Provide stops to protect walls, casework or other hardware.

1. Except as otherwise indicated, provide stops (wall, floor or overhead) at each leaf of every swinging door leaf.

2. Where wall or floor stops are not appropriate, provide overhead holders.

B. Weatherstrip and Gasket

1. Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled.

2. Provide non-corrosive fasteners as recommended by the manufacturer for application indicated.

C. Thresholds

1. Except as otherwise indicated, provide standard metal threshold unit of type, size and profile as detailed or scheduled.

D. Silencers

1. Interior hollow metal frames, 3 for single doors, 2 for pairs of doors.

E. Kickplates

1. Four beveled edges, 0.050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.

2.11 HARDWARE FINISHES

A. Provide the following finishes unless noted differently in hardware groups:

1. Hinges, Exterior: 613 Oil Rubbed Bronze.

2. Hinges, Interior: 640 Oil Rubbed Bronze.

3. Locksets: 613 Oil Rubbed Bronze.
4. Exit Devices: 313 Dark Bronze.
5. Closers: 695 Dark Bronze.
6. Kickplates: 613 Oil Rubbed Bronze.
7. Other Hardware: 613 Oil Rubbed Bronze
8. Thresholds: Bronze Anodized Aluminum.
9. Weatherstrip and Sweeps: Bronze Anodized Aluminum.

2.12 KEYING REQUIREMENTS

A. Provide SFIC construction cores and permanent cores. Plastic construction cores are not allowed. Furnish all permanent cores to Owner for their internal keying process. Coordinate the final keyway with Owner. Owner to replace the construction cores with final cores when the project is completed.

B. Key Quantities

10 EA Construction Keys

PART 3 - EXECUTION

3.1 ACCEPTABLE INSTALLERS:

A. Factory trained, certified, and carries a factory-issued card certifying that person as a “Certified Installer”. Alternative: can demonstrate suitably equivalent competence and experience.

3.2 PREPARATION

A. Ensure that walls and frames are square and plumb before hardware installation.

B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes. Notify Architect of any code conflicts before ordering materials.

3.3 INSTALLATION

A. Do not install surface mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation.

B. Locate floor stops not more than 4 inches from the wall.

C. Drill pilot holes for fasteners in wood doors and/or frames.

3.4 ADJUSTING

A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.

B. Hardware damaged by improper installation or adjustment methods to be repaired or replaced to Owner’s satisfaction.

3.5 FOLLOW UP INSPECTION

A. Installer to provide letter of agreement to Owner that approximately 6 months after substantial completion, installer will visit project to accomplish the following:

1. Re-adjust locks and closers.

2. Evaluate maintenance procedures and recommend changes or additions, and instruct Owner's personnel.
3. Identify items that have deteriorated or failed.
4. Submit written report identifying problems and likely future problems.

3.6 DEMONSTRATION

A. Demonstrate electrical, electronic and pneumatic hardware system including adjustment and maintenance procedures

3.7 PROTECTION/CLEANING

A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.

END OF SECTION

SECTION 08 80 00 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Glass products (CGG-1, CTG-1, CTG-2).
2. Glazing films (GF-1).
3. Glazing channels.
4. Glazing sealants.
5. Glazing tapes.
6. Miscellaneous glazing materials.

B. Related Requirements:

1. Section 08 11 13 “Hollow Metal Door and Frames”.
2. Section 08 14 16 “Flush Wood Doors”.

1.3 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

C. IBC: International Building Code.

D. STC: Sound Transmission Class.

1.4 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review temporary protection requirements for glazing during and after installation.

1.6 SUBMITTALS

A. Product Data: For each type of product.

B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches square.

C. Glazing Accessory Samples: For sealants and colored spacers, in 12-inch lengths. Install sealant Samples between two strips of material representative in color of the adjoining framing system.

D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

E. Product Certificates: For glass.

F. Preconstruction adhesion and compatibility test report.

G. Sample Warranties: For special warranties.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

B. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

C. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

D. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution in mockups of assemblies specified in other Sections that are indicated to receive glazing specified in this Section. Use materials and installation methods specified in this Section.

1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

E. Strength:

1. Annealed Glass: Annealed glass is prohibited.

2. Heat-Strengthened Glass: Except where fully tempered glass as indicated all glass shall be heat-strengthened glass.

3. Fully Tempered Glass: Provide fully tempered glass where glass is monolithic and where safety glazing is required by Code.

1.8 PRECONSTRUCTION TESTING

A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.

1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.

2. Use ASTM C 1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.

3. Test no fewer than eight Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.

4. Schedule enough time for testing and analyzing results to prevent delaying the Work.

5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

1.11 WARRANTY

A. Manufacturer's Special Warranty for Fully Tempered Glass: Manufacturer agrees to replace heat-soaked tempered glass units that spontaneously break due to nickel sulfide (NiS) inclusions at a rate exceeding 0.3 percent (3/1000) within specified warranty period. Coverage for any other cause is excluded.

1. Warranty Period: Ten (10) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E 1300.

1. Thickness of Patterned Glass: Base design of patterned glass on thickness at thinnest part of the glass.

2. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.

3. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.

C. Safety Glazing: Where safety glazing is indicated or required by code, provide glazing that complies with 16 CFR 1201, Category II.

D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.

E. Acoustic Performance:

1. Interior Glazing: Provide products meeting STC requirements indicated.

2.2 MANUFACTURERS

A. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.

B. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

C. Basis-of-Design Manufacturer: Vitro Architectural Glass; www.vitroglazings.com.

D. Other Approved Manufacturers:

1. Oldcastle Building Envelope; www.obe.com.

2. Pilkington, a div. of Nippon Sheet Glass Co., Ltd; www.pilkington.com.

3. Cardinal Glass Industries, Inc.; www.cardinalcorp.com

4. Schott North America, Inc.; www.us.schott.com

5. Viracon, Apogee Enterprises, Inc: www.viracon.com

2.3 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. GANA Publications: "Glazing Manual."

B. Safety Glazing Labeling: Where safety glazing is provided, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.

1. Minimum Glass Thickness for Exterior Lites: 6 mm.

2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.

D. Strength: Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-Q3.

B. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

C. Heat-Strengthened Float Glass: ASTM C 1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

D. Edge Treatment at Monolithic Glazing: Where monolithic glazing is indicated and edges are exposed to view, provide glazing with polished edges and the following edge treatments:

1. At Structural Sealant Butt Joints: Provide flat ground smooth edges.

2. At Exposed Edges: Provide flat polished edges with beveled edges and corners, 1/8 inch (3 mm) at outer edges and corners.

2.5 GLAZING TYPES

A. Glazing Type CGG-1: Interior, monolithic single lites.

1. Clear float glass, heat-strengthened.

2. Minimum Thickness: 6 mm.

B. Glazing Type CTG-1: Interior, monolithic single lites.

1. Clear float glass, fully tempered.

2. Minimum Thickness: 6 mm.

C. Glazing Type CTG-2: Interior, monolithic single lites with glazing film (GF-1).

1. Clear float glass, fully tempered.

2. Butt-joint glass, clear silicone seams, clean ‘C’ shaped edges.

3. Minimum Thickness: 6 mm.

2.6 GLAZING FILM, GF-1

A. Decorative Film Overlay: Translucent, dimensionally stable film, with pressure-sensitive, clear adhesive back for adhering to glass and releasable protective backing.

1. Fire Classification: Class A.

2. Basis-of-Design Product: 3M Fasara Glass Finishes; www.3m.com.

a. Finish: As selected by Architect.

b. Film Thickness: 3.2 mils.

2.7 GLAZING CHANNELS

A. Glazing Channels: Aluminum channels of sizes required for application and glass sizes indicated; finish as indicated; provide gaskets and accessories required for complete installation, including stainless steel fasteners of type and size required.

1. Basis-of-Design Manufacturer: C.R. Laurence; www.crlaurence.com.

2. Finish: Satin, clear anodized.

3. Size:

a. Depth: 1 inch, or as indicated.

b. Width: As required for glass type indicated.

B. Fasteners: Stainless steel, of type and size required for installation and recommended by channel manufacturer for conditions indicated. Refer to Section 05 50 00 “Metal Fabrications” for fastener requirements.

C. Gaskets: As recommended by channel manufacturer for type of installation indicated.

2.8 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.

2.9 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 804.3 tape, where indicated.

2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.

3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.

2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

C. Approved Manufacturers:

1. Pecora Corp.; www.pecora.com.

2. Saint-Gobain Performance Plastics: www.plastics.saint-gobain.com

2.10 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.

2. Presence and functioning of weep systems.

3. Minimum required face and edge clearances.

4. Effective sealing between joints of glass-framing members.

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

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches.

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.

2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

A. Immediately after installation remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 08 88 13 - FIRE-RESISTANT GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fire-resistance-rated glazing.

B. Related Requirements:

1. Section 08 11 13 “Hollow Metal Doors and Frames” for doors scheduled for fire-resistance-rated glazing.

1.2 COORDINATION

A. Coordinate glazing dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.3 SUBMITTALS

A. Product Data: For each type of product.

B. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

C. Product Certificates: For each type of glass and glazing product.

D. Sample Warranties: For special warranties.

1.4 WARRANTY

A. Manufacturer's Special Warranty on Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; deterioration of glazing materials; or other defects in construction.

2.2 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organization below unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. GANA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."

B. Safety Glazing Labeling: Permanently mark glazing with certification label of the Safety Glazing Certification Council. Label shall indicate manufacturer's name, type of glass, glass thickness, and safety glazing standard with which glass complies.

2.3 GLASS PRODUCTS

A. Ultraclear Float Glass: ASTM C1036, Type I, Quality-Q3, Class I (clear), with visible light transmission not less than 91 percent.

B. Float Glass: ASTM C1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.

C. Laminated Glass: ASTM C1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.

2.4 FIRE-RESISTANCE-RATED GLAZING

A. Fire-Resistance-Rated Glazing: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-resistance ratings indicated, based on testing in accordance with ASTM E119 or UL 263.

B. Product: Subject to compliance with requirements, provide SuperClear 45-HS-LI, by SaftiFirst.

1. Material: 3/4-inch thick low-iron special fire protective glazing.

2. Weight: 9 lbs./sq. ft.

3. Sound Transmission Rating: 37 STC/35 OITC, as tested in standard hollow metal frames. Glass only STC/OITC values are not acceptable.

4. Appearance: Clear, wireless and tint-free.

5. Fire Rating: 60 minutes with hose stream.

2.5 GLAZING ACCESSORIES

A. Provide glazing gaskets, glazing sealants, glazing tapes, setting blocks, spacers, edge blocks, and other glazing accessories that are compatible with glazing products and each other and are approved by testing agencies that listed and labeled fire-resistant glazing products with which products are used for applications and fire-protection ratings indicated.

B. Glazing Sealants for Fire-Rated Glazing Products: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT. Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated.

1. Sealants shall have a VOC content of 250 g/L or less.

2. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 GLAZING

A. Use methods approved by testing agencies that listed and labeled fire-resistant glazing products.

B. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials unless more stringent requirements are indicated, including those in referenced glazing publications.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

3.2 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer.

C. Remove and replace glass that is damaged during construction period.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 09 22 16 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Non-load-bearing steel framing systems for interior partitions.
2. Acoustical components.
3. Suspension systems for interior gypsum ceilings and soffits.

B. Related Requirements:

1. Section 06 41 00 “Architectural Casework” for coordination of wood assemblies supported by interior partition framing.

1.3 COORDINATION

A. Coordinate opening requirements with Division 08 “Openings” Sections.

B. Coordinate items requiring blocking and for additional support including, but not limited to the following:

1. Casework and cabinets in Section 06 41 00 “Architectural Casework”.
2. Work in soffits and suspended ceilings.

1.4 SUBMITTALS

A. Product Data: For each type of product.

1. Studs and Runners: Provide documentation that framing members' certification is according to SIFA's "Code Compliance Certification Program for Cold-Formed Steel Structural and Non-Structural Framing Members."

B. Shop Drawings: Floor and ceiling plans indicating framing size, thickness and spacing.

1. Section Details: As required for framing conditions indicated.

C. Evaluation Reports: from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction for the following:

1. For steel studs and runners and firestop tracks.
2. For each ceiling suspension system, from ICC-ES.

1.5 QUALITY ASSURANCE

A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Steel Stud Manufacturers Association, the Certified Steel Stud Association or the Steel Framing Industry Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Suspended ceilings shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

B. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.

C. 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.

1. STC 60 wall: Provide 20 gage, 4 inch studs with isolation clips and horizontal furring channels.

2. STC 50 and 45 wall: Provide 20 gage, 4 inch studs and “QuietRock” gypsum board.

D. Horizontal Deflection: For wall assemblies, limited to 1/240 of the wall height based on horizontal loading of 5 lbf/sq. ft. (240 Pa).

E. Vertical Deflection: For ceiling joists, soffit framing and suspension systems, deflection limited to 1/360 of the span for live loads and 1/240 for total loads of the span.

1. Vertical Loading: 6 lbf/sq. ft.

a. Provide 13 lbf/sq. ft. (480 Pa) at ceilings indicated to have suspended items attached.

F. Spacing:

1. All interior wall and partition framing shall be 16 inches o.c. maximum. No wall assembly scheduled for tile or level 5 gypsum board finishes shall exceed 16 inches o.c. maximum.

2. Wall assemblies concealed to view by cabinet or casework may be 24 inches o.c. maximum except where any portion of the wall is to receive tile finishes.

3. At ceilings scheduled for level 5 finishes, framing shall be 16 inches o.c. maximum.

2.2 FRAMING SYSTEMS

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: ASTM A 653/A 653M, G60, hot-dip galvanized unless otherwise indicated.

B. Studs and Runners: ASTM C 645. Use either steel studs and runners or embossed steel studs and runners.

1. Steel Studs and Runners:

a. Minimum Base-Metal Thickness: As required by performance requirements for horizontal deflection and span.

b. Depth: As indicated on Drawings.

C. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Clip System: Clips designed for use in head-of-wall deflection conditions that provide a positive attachment of studs to runners while allowing 2-inch (51-mm) minimum vertical movement.

2. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.

3. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

D. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.

1. Minimum Base-Metal Thickness: As indicated on Drawings.

E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Steel Thickness: As indicated on Drawings.

F. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-metal thickness, with minimum 1/2-inch- wide flanges.

1. Depth: As indicated on Drawings.

2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch-thick, galvanized steel.

G. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Minimum Base-Metal Thickness: As required by performance requirements for horizontal deflection and span.

2. Depth: As indicated on Drawings.

H. Resilient Furring Channels: 1/2-inch-deep, steel sheet members designed to reduce sound transmission.

1. Configuration: Asymmetrical or hat shaped.

I. Cold-Rolled Furring Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges.

1. Depth: As indicated on Drawings.

2. Furring Brackets: Adjustable, corrugated-edge-type steel sheet with minimum uncoated-steel thickness of 0.0329 inch.

3. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.

J. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 7/8 inch, minimum uncoated-metal thickness of 0.0179 inch, and depth required to fit insulation thickness indicated.

K. Resilient Isolation Clip: Sound isolation clips for walls and ceiling assemblies.

1. Basis-of-Design Product: IsoMax by Kinetics Noise Control, Inc.; www.kineticsnoise.com.

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.

B. Hanger Attachments to Metal Decking: Of type suitable for application and approved by Architect and Engineer.

1. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190, conducted by a qualified testing and inspecting agency.

C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.

D. Flat Hangers: Steel sheet, size as required for application, with thickness required by performance requirements.

E. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness required by performance requirements and minimum 1/2-inch-wide flanges.

1. Depth: 2 inches; as required or indicated.

F. Furring Channels (Furring Members):

1. Cold-Rolled Channels: Minimum 0.0538-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges, 3/4 inch deep.

2. Steel Studs and Runners: ASTM C 645.

a. Minimum Base-Metal Thickness: As required by performance requirements for deflection and span.

b. Depth: As indicated in Drawings.

3. Embossed Steel Studs and Runners: ASTM C 645.

a. Minimum Base-Metal Thickness: As required by performance requirements for deflection and span.

b. Depth: As indicated in Drawings.

4. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch deep.

a. Minimum Base-Metal Thickness: As required by performance requirements for deflection and span.

5. Resilient Furring Channels: 1/2-inch-deep members designed to reduce sound transmission.

a. Configuration: Asymmetrical or hat shaped.

b. Basis-of-Design Products: RC Deluxe by Clark Dietrich; www.clarkdietrich.com.

G. Grid Suspension System for Gypsum Board Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.

2.4 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Isolation Strip at Exterior Walls: Provide the following:

1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

B. 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.

1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.

C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, furnishings, or similar construction.

D. Install bracing at terminations in assemblies.

E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

1. Provide cantilevered framing where both sides of joints are to be single-member spanned.

3.4 INSTALLING FRAMED ASSEMBLIES

A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

1. Single-Layer Application: 16 inches o.c. unless otherwise indicated.

2. Multilayer Application: 16 inches o.c. unless otherwise indicated.

3. Tile Backing Panels: 16 inches o.c. unless otherwise indicated.

B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

C. Install studs so flanges within framing system point in same direction.

D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.

2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
    a. Install two studs at each jamb unless otherwise indicated.
    b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
    c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
    a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.

E. Direct Furring:
1. Screw to framing.
2. Weld or screw attach to structural framing, where permitted by Structural Engineer of Record.

F. Z-Shaped Furring Members: Where indicated or required.
1. 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.

G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch in 10 feet, measured from the plane formed by faces of adjacent framing.

3.5 INSTALLING SUSPENSION SYSTEMS

A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
1. Hangers: 48 inches o.c.
2. Carrying Channels (Main Runners): 48 inches o.c.
3. Furring Channels (Furring Members): 16 inches o.c., or as indicated.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
    a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

    a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.

4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.

5. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.

6. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

E. Seismic Bracing: Sway-brace suspension systems with hangers used for support.

F. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

G. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Interior gypsum board.
2. Acoustic insulation.
3. Acoustical sealants.
4. Partition closures at exterior window systems.

B. Related Requirements:

1. Section 09 22 16 "Non-Structural Metal Framing" for non-structural steel framing and suspension systems that support gypsum board panels.

1.3 SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: 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.

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

B. Basis-of-Design Manufacturer: American Gypsum; www.americangypsum.com.

C. Other Acceptable Manufacturers:

1. CertainTeed Corporation, www.certainteed.com.
2. Georgia-Pacific Building Products, www.gp.com.
3. National Gypsum Company, nationalgypsum.com.
4. PABCO Gypsum, www.QuietRock.com.
5. USG Corporation, usg.com.

2.3 INTERIOR GYPSUM BOARD

A. GWB-1: Gypsum Board, Type X, ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

B. GWB-2: Glass-Mat, Water-Resistant Backing Board, ASTM C1178/C1178M, with manufacturer's standard edges.

1. Basis-of-Design Product: AquaBlock by American Gypsum.
2. Core: 5/8 inch, Type X.
3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

C. GWB-2: Water-Resistant Gypsum Backing Board, ASTM C1396/C1396M, with manufacturer's standard edges.

1. Basis-of-Design Product: AquaBlock by American Gypsum.
2. Core: 5/8 inch, Type X.

D. GWB-3: Impact-Resistant Gypsum Board, ASTM C 1396/C 1396M; tested according to ASTM C 1629/C 1629M.

1. Basis-of-Design Product: M-Bloc by American Gypsum.
2. Core: 5/8 inch, Type X.
3. Surface Abrasion: ASTM C 1629/C 1629M, meets or exceeds Level 3 requirements.
4. Indentation: ASTM C 1629/C 1629M, meets or exceeds Level 3 requirements.
5. Soft-Body Impact: ASTM C 1629/C 1629M, meets or exceeds Level 3 requirements.
6. Long Edges: Tapered.
7. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.

2. Shapes:
    a. Cornerbead.
    b. LC-Bead: J-shaped; exposed long flange receives joint compound.
    c. L-Bead: L-shaped; exposed long flange receives joint compound.
    d. Expansion (control) joint.
3. Reveal trim:
    a. Anodized aluminum: by Fry Reglet.
    b. Vinyl: paintable trim by Trim Tex.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape: Paper.

C. Joint Compound for Interior Gypsum Board: 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.
    a. Use setting-type compound for installing paper-faced metal trim accessories.
3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.
5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.

2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

1. Adhesives shall have a VOC content of 50 g/L or less.
2. Adhesive shall comply with the testing and product 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."

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 backer units, use screws of type and size recommended by panel manufacturer.

D. Sound-Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

2. Basis-of-Design Product: Safe'n'Sound by Rockwool; www.rockwool.com.

    a. Thickness: As required to fill stud cavity in friction-fit application.

E. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

1. Basis-of-Design Product: Quiet Seal Pro by Quiet Rock; www.quietrock.com.

2. Other Approved Manufacturers:

    a. Accumetric LLC.

    b. Franklin International.

    c. Grabber Construction Products.

    d. Hilti, Inc.

    e. Pecora Corporation.

    f. Specified Technologies, Inc.

F. Putty Pad Sealant: At acoustic rated partitions and fire-rated partitions in order to provide noise transmission resistance and fire resistance at electrical boxes and other penetrations.

1. Approved Products:

    a. Fire Barrier Moldable Putty Pads MPP+ by 3M; www.3m.com.

    b. Firestop Putty Pad by Acoustical Solutions; www.acousticalolutionss.com.

    c. CP 617 Firestop Putty Pad by Hilti North America; www.hilti.com.

    d. Fire-Rated Putty Pads by Metacaulk; www.metacaulk.com.

2. Coordinate with Division 26 "Electrical" Sections for fire-rated sealant at electrical boxes.

G. Partition Closure: Sound barrier wall end caps; extruded aluminum partition closure meeting exterior window system.

1. Extruded 6063-T5 temper aluminum partition closures shall be pre-assembled and spring loaded to provide a tight fit for vertical junctures of partitions and window mullions.

2. Finish shall match adjacent window system finish, unless indicated otherwise.

3. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

    a. Mullion trim cap to be sized to accommodate thermal movement.

4. Provide minimum sound transmission indicated, with all sound attenuation materials as recommended by manufacturer.

5. Basis-of-Design Product: 55 Wide Mullion Trim Cap by Mull-It-Over Products; www.mullitoverproducts.com.

    a. Sound Transmission: As indicated in Drawings.

    b. Compressible foam: 1/2 inch thick, unless otherwise indicated.

    c. Finish: Match abutting window system.

        1) At Interior Aluminum Frames: Clear anodic finish; AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

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 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. 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.

I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Type X: As indicated on Drawings Where required for fire-resistance-rated assembly.
2. Ceiling Type: Ceiling surfaces.
3. Impact-Resistant Type: As indicated on Drawings.

B. 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 horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
3. On Z-shaped 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.

C. 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 one 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-shaped 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 with screws; fasten face layers with adhesive and supplementary fasteners.

D. 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 instructions and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.4 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. L-Bead: Use where indicated.
4. Curved-Edge Cornerbead: Use at curved openings.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.5 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 for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for acoustical tile where indicated in Drawings.
3. Level 3: Where indicated in Drawings.
4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
   a. Primer and its application to surfaces are specified in Section 09 91 00 "Painting."
5. Level 5: Not used.

3.6 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 09 30 00 - TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Tile.
2. Waterproof membrane.
3. Metal edge strips.

B. Related Requirements:

1. Section 07 92 00 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
2. Section 09 29 00 "Gypsum Board" for tile backer board.

1.3 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."

C. Module Size: Actual tile size plus joint width indicated.

D. Face Size: Actual tile size, excluding spacer lugs.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.5 SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Initial Selection: For tile, grout, and accessories involving color selection.

C. Samples for Verification:

1. Full-size units of each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide full sheets of each color blend.
2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least 24 inches (600 mm) square, but not fewer than four tiles. Use grout of type and in color or colors approved for completed Work.

3. Full-size units of each type of trim and accessory for each color and finish required.
4. Stone thresholds in 6-inch (150-mm) lengths.
5. Metal edge strips in 6-inch (150-mm) lengths.

D. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

E. Product Certificates: For each type of product.

F. Product Test Reports: For tile-setting and -grouting products and certified porcelain tile.

1.6 MAINTENANCE MATERIAL SUBMITTALS

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. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.7 QUALITY ASSURANCE

A. Flood Testing: Where requested by Owner, provide the following test:

1. Allow adhesive to cure fully before flood testing, a minimum of 24 hours after final cure at 70°F (21°C) and 50% RH. Cold and/or wet conditions will require a longer curing time.

1.8 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 requirements in ANSI A137.1 for labeling 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 can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

1.9 FIELD 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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Manufacturer, Tile: As scheduled on Drawings.

B. Source Limitations for Tile: Obtain tile of each type and color or finish from single source or producer.

1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

C. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.

1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.

2. Obtain waterproof membrane and crack isolation membrane, except for vapor retarder sheet and cleavage membrane products, from manufacturer of setting and grouting materials.

D. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacture and approved for use with setting materials:

1. Waterproof membrane.

2. Crack isolation membrane.

3. Metal edge strips.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

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.

C. Factory Blending: For tile exhibiting color variations within ranges, 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.

D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

1. Where tile is indicated for installation in swimming pools, on exteriors, or in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

2.3 PERFORMANCE REQUIREMENTS, PPS

A. General: Performance requirements indicated are to provide a general guideline for installation requirements. Field verify existing conditions.

B. Seal all grout joints, except epoxy type, to prevent penetration and improve cleaning.

C. For floor tiles, provide ASNI A137.1 compliant Dynamic Coefficient of Friction of not less than 0.60.

D. Set tile in full mortar bed assembly at wet area, toilet rooms, showers and dishwashing areas. Thinset is acceptable where directly over concrete slabs.

E. Sealants, mortar and grouts shall comply with LEED for Schools v4, EQ Credit: Low emitting materials, requirements for low-emitting materials. All sealants installed inside of the weatherproofing system and applied on-site shall meet:

1. Sealants and setting materials: The testing and product requirements of the California Department of Public Health (CDPH) Standard Method v1.1–2010 using the applicable exposure scenario. Product certifications that demonstrate compliance include GREENGUARD (GG) Gold , Collaborative for High Performance Schools (CHPS) (excluding CHPS approved third-party certifications), and SCS Indoor Advantage Gold.

2. Maximum VOC limit: 250 g/L. All sealants wet-applied on site must meet the applicable chemical content requirements of SCAQMD Rule 1168, July 1, 2005, Adhesive and Sealant Applications, as analyzed by the methods specified in Rule 1168. For grouts and mortars, maximum VOC limit is 65 g/L.

2.4 TILE PRODUCTS

A. Porcelain Floor Tile, PT-1:

1. Basis-of-Design Product: Eco Stone by Pental.
2. Color: Taupe.
3. Finish: Naturale R10.
4. Size: 12 by 24 inches.

B. Porcelain Floor Tile, PT-2:

1. Basis-of-Design Product: Eco Stone by Pental.
2. Color: Taupe.
3. Finish: Naturale R10.
4. Size: 12 by 24 inches, cut to 6 inch height.

C. Porcelain Wall Tile, PT-3:

1. Basis-of-Design Product: Mark by Pental.
2. Color: Gypsum.
3. Finish: Matte.
4. Size: 12 by 24 inches.

2.5 TILE BACKING PANELS

A. See Section 09 29 00 "Gypsum Board".

2.6 WATERPROOFING AND CRACK ISOLATION MEMBRANE

A. General: 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.

B. Fluid-Applied Tiling Membrane: Two-part liquid rubber polymer and reinforcing fabric; compatible with polyethylene-polypropylene sheet waterproofing.

1. Basis-of-Design Product: Blue 92 Anti-Fracture Membrane by Laticrete, Inc.; www.laticrete.com.
2. Applications: At tiled shower assemblies, elevated slab construction, and where indicated.

C. Waterproofing and Crack Isolation Accessories: Utilize manufacturer’s standard tapes, bands, corners and recommended adhesives to provide a complete and warrantable system.

2.7 SETTING MATERIALS

A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.

1. Cleavage Membrane: Asphalt felt, ASTM D 226/D 226M, Type I (No. 15); or polyethylene sheeting, ASTM D 4397, 4.0 mils (0.1 mm) thick.

2. Reinforcing Wire Fabric: Galvanized, welded-wire fabric, 2 by 2 inches by 0.062-inch diameter; comply with ASTM A 185/A 185M and ASTM A 82/A 82M, except for minimum wire size.

3. Expanded Metal Lath: Diamond-mesh lath complying with ASTM C 847.

   a. Base Metal and Finish for Interior Applications: Uncoated or zinc-coated (galvanized) steel sheet, with uncoated steel sheet painted after fabrication into lath.

   b. Base Metal and Finish for Exterior Applications: Zinc-coated (galvanized) steel sheet.

   c. Configuration over Studs and Furring: Flat.

   d. Configuration over Solid Surfaces: Self-furring.

4. Weight: 2.5 lb/sq. yd. (1.4 kg/sq. m).

5. Latex Additive: Manufacturer's standard water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.

B. Modified Dry-Set Mortar (Thinset): ANSI A118.4.

1. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2. For floor applications: Provide waterproofing and crack isolation or uncoupling membrane as required based on requirements, substrate composition, structural support conditions, and manufacturer’s published recommendations.

2.8 GROUT MATERIALS

A. High-Performance Tile Grout: ANSI A118.7.

1. Basis-of-Design Product: PermaColor by Laticrete, or approved equal.

B. Water-Cleanable Epoxy Grout: ANSI A118.3, with a VOC content of 65 g/L or less.

1. Basis-of-Design Product: Spectralock 2000 IG by Laticrete or approved equal.

C. Grout for Pregrouted Tile Sheets: Same product used in factory to pregrout tile sheets.

D. Color, GRT-1: 89 Smoke Grey.

2.9 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Vapor-Retarder Membrane:

1. At shower and bath tub surrounds: Provide waterproofing and crack isolation membrane.

2. At restrooms, bathrooms and locker rooms, except shower and bath tub surrounds: Polyethylene sheeting, ASTM D 4397, 10.0 mils thick, unless otherwise indicated.

C. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, satin anodized aluminum extrusions.

1. Basis-of-Design Products: Provide profiles indicated on Drawings and as scheduled.

D. 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.

E. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

2.10 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 the Work.

1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

2. Verify that concrete substrates for tile floors installed with adhesives, bonded mortar bed, or thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.

a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.

b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

3. 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.

4. 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. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. 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 (1:50) toward drains.

C. Blending: For tile exhibiting color variations, 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 CERAMIC TILE INSTALLATION

A. 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.

1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:

a. Tile floors in wet areas.

b. Tile floors consisting of tiles 8 by 8 inches (200 by 200 mm) or larger.

c. Tile floors consisting of rib-backed tiles.

B. 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.

C. 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.

D. Wherever available, provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.

F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. 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.

2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.

3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

G. Joint Widths: As indicated.

H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints 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.

J. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in modified dry-set mortar (thinset).

2. Do not extend cleavage membrane, waterproofing, or crack isolation membrane under thresholds set in modified dry-set mortar. Fill joints between such thresholds and adjoining tile set on cleavage membrane, waterproofing, or crack isolation membrane with elastomeric sealant.

K. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated].

L. Floor Sealer: Apply floor sealer to cementitious grout joints in tile floors 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 WATERPROOFING INSTALLATION

A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.

B. Allow waterproofing to cure and verify by testing that it is watertight before installing tile or setting materials over it.

3.5 WATERPROOFING AND CRACK ISOLATION MEMBRANE INSTALLATION

A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

B. Allow crack isolation membrane to cure before installing tile or setting materials over it.

3.6 ADJUSTING AND CLEANING

A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.

B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove grout residue from tile as soon as possible.

2. 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.

3.7 PROTECTION

A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.8 TILE INSTALLATION SCHEDULE

A. General: Provide waterproof and crack isolation membrane at all elevated concrete slabs and at all shower or wet areas.

B. Interior Floor Installation, Concrete Subfloor: Thinset.

1. Tile Assembly: TCNA F113, F113 STONE.

a. Bond Coat: Modified dry-set.

b. Grout: Epoxy.

C. Interior Floor Installation, Concrete Subfloor: Thickset, where existing floor does not slope to drain and where matching existing; with cleavage membrane.

1. Tile Assembly: TCNA F114. Provide F121 and waterproofing membrane at shower and wet areas.

a. Bond Coat: Modified dry-set.

b. Grout: Epoxy.

D. Shower Receptor and Wall Installation:

1. Tile Assembly: TCNA B415; thinset on waterproof membrane over cementitious backer units over vapor-retarder.

a. Bond Coat: Modified dry-set.

b. Grout: Epoxy.

E. Interior Wall Installation, Metal and Wood Studs:

1. Tile Assembly: TCNA W244C; thinset over cement backer; provide vapor retarder behind backer at shower and wet areas with waterproof membrane over backer.

a. Bond Coat: Modified-dry set.

b. Grout:

1) High-performance at non-wet areas.

2) Epoxy at shower and wet areas.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Acoustical panels and suspension systems (ACT-1, ACT-2, ACT-3).
2. Trim and miscellaneous accessories.
3. Delegated design.

B. Related Requirements:

1. Section 01 61 16 “Delegated Design Requirements”.
2. Division 21 “Fire Suppression” Sections for coordination with fire suppression sprinklers.
3. Division 23 “Heating, Ventilating and Air Conditioning” Sections for coordination with air diffusers and returns in ceiling.
4. Division 26 “Electrical” Sections for coordination with lighting fixtures in ceiling.
5. Division 27 “Communications” Sections for coordination with audio-visual components in ceiling.
6. Division 28 “Electronic Safety and Security” Sections for coordination with Fire Detection and Alarm System.

1.3 DEFINITIONS

A. AC: Articulation Class.

B. CAC: Ceiling Attenuation Class.

C. LR: Light Reflectance Coefficient.

D. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

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

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.

1. Acoustical Panel: Set of samples of each type, color, pattern, and texture. Submit full-size for most panel types; submit partial panel sample may be submitted for 24- by 24-inch (600- by 600-mm) for larger panels.

2. Exposed Suspension System Members, Moldings, and Trim: Set of 12-inch- (300-mm-) long Samples of each type, finish, and color.

D. Maintenance Data: For finishes to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Panels: Full-size panels equal to 2 percent of quantity of each type installed.

2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

3. Hold-Down Clips: Equal to 2 percent of quantity installed.

4. Impact Clips: Equal to 2 percent of quantity installed.

1.6 QUALITY ASSURANCE

A. Acoustical Testing Agency Qualifications: An independent testing laboratory, or an NVLAP-accredited laboratory, with the experience and capability to conduct the testing indicated. NVLAP-accredited laboratories must document accreditation, based on a "Certificate of Accreditation" and a "Scope of Accreditation" listing the test methods specified.

B. Source Limitations:

1. Acoustical Ceiling Panel: Obtain each type through one source from a single manufacturer.

2. Suspension System: Obtain each type through one source from a single manufacturer.

C. Pre-installation Conference: Conduct conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical panels to avoid soiling exposed surfaces or damaging surfaces and edges.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

B. Sequence work to assure that acoustical ceilings are not installed until building is enclosed, permanent heating system is available, dust generating activities have terminated, wet work is complete and dry, and work above ceilings is complete.

C. Maintain temperature within 15 degrees Fahrenheit (8 degrees C) and relative humidity within 10 percent of design conditions for spaces of installation not less than 48 hours before installation begins and thereafter.

1.9 COORDINATION

A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.10 WARRANTY

A. See Section 01 78 00 “Closeout Submittals”, for additional warranty requirements.

B. Provide manufacturer's standard written thirty (30) year limited warranty for acoustical panels and suspension grid.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 61 16 “Delegated Design Requirements,” to design suspension systems.

B. Seismic Standard: Provide acoustical panel ceilings conforming to the requirements of Chapter 16 of the Orgeon Structural Specialty Code, and designed and installed to withstand the effects of earthquake motions for Seismic Design Category “D”, according to the following:

1. ASCE 7, "Minimum Design Loads for Buildings and Other Structures", Section 13.5.6 Suspended Ceilings.

2. ASTM C635/C635M, “Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels”.

3. ASTM C636/C636M, “Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings”.

4. ASTM E580/E580M, “Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions”.

C. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:

1. Fire-Resistance Characteristics: Where indicated, provide acoustical panel ceilings identical to those of assemblies tested for fire resistance according to one of the following standards, or another testing and inspecting agency acceptable to authorities having jurisdiction:

a. ASTM E 119 "Test Methods for Fire Tests of Building Construction and Materials."

b. Underwriters Laboratory (UL) "Fire Resistance Directory."

2. Identify materials with appropriate markings of applicable testing and inspecting agency.

3. Surface-Burning Characteristics: Provide acoustical panels with the following surface-burning characteristics complying with one of the following:

a. ASTM E 1264 "Standard Classification for Acoustical Ceiling Products" for Class A materials as determined by testing identical products per ASTM E 84 "Standard Test Method for Surface Burning Characteristics of Building Materials":

1) Smoke-Developed Index: 450 or less.

D. Acoustic Performance: Refer to Acoustic Performance at individual Product articles below

2.2 ACOUSTICAL PANELS, GENERAL

A. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated. Comply with one of the following standards:

1. ASTM E 1264 "Standard Classification for Acoustical Ceiling Products."

a. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 16 inches (400 mm) away from test surface per ASTM E 795 "Standard Practice for Mounting Test Specimens During Sound Absorption Tests."

B. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.

1. Appearance characteristics of acoustical panels are indicated by referencing designations of ASTM E 1264 "Standard Classification for Acoustical Ceiling Products." Provide products selected by Architect from manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail and size. Products that do not list ASTM E 1264 characteristics shall be tested by the product manufacturer's laboratory and shall meet comparable ASTM E 1264 standards for country of origin.

C. Coating-Based Antimicrobial Treatment: Provide acoustical panels with face and back surfaces coated with antimicrobial treatment consisting of manufacturer's standard formulation with fungicide added to inhibit growth of mold and mildew and showing no mold or mildew growth when tested according to one of the following standards:

1. ASTM D 3273 "Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber."

2.3 ACOUSTICAL PANEL CEILINGS

A. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

B. Basis-of-Design Product, ACT-1: Lyra Second Look by Armstrong.

1. Classification: Provide fire-resistance-rated panels complying with ASTM E 1264 for type, form, and pattern as follows:

a. Type and Form: Fiberglass, Type XII, Form 2, pattern E.

2. Edge Detail: 9/16-inch square tegular.

3. Thickness: 7/8 inch.

4. Size: 24 by 48 inches.

5. Panel Color: White.

6. Edge Trim:

a. Basis-of-Design Product: Axiom by Armstrong.

b. Product Nos.: AX4STRWH, AX40SCPWH, AX41SCPWH.

c. Color: White.

C. Basis-of-Design Product, ACT-2: Existing, salvaged acoustic ceiling tile.

1. Existing grid to remain.

2. Color: As indicated in Drawings, painting as specified in Section 09 91 00 “Painting”.

D. Basis-of-Design Product, ACT-3: Ultima Health Zone No. 1938 by Armstrong.

1. Classification: Provide fire-resistance-rated panels complying with ASTM E 1264 for type, form, and pattern as follows:

a. Type and Form: Fiberglass, Type XII, Form 2, pattern E.

2. Edge Detail: 15/16-inch square lay-in.

3. Thickness: 3/4 inch.

4. Size: 24 by 48 inches.

5. NRC: 0.70.

6. Panel Color: White.

2.4 METAL SUSPENSION SYSTEMS, GENERAL

A. Suspension and Trim System:

1. Basis-of-Design Product: 15/16-inch Prelude Exposed Tee by Armstrong.

a. Duty Rating: Heavy Duty.

2. Color: White, or as selected by Architect.

3. Cloud Perimeter Trim: None.

B. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements of one of the following standards:

1. ASTM C 635 "Standard Specification for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings."

C. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.

1. High-Humidity Finish: Comply with one of the following standards:

a. ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.

D. Attachment Devices: Size for five times the design load indicated in one of the following:

1. ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated.

a. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing per ASTM E 488 "Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements" or ASTM E 1512 "Standard Test methods for Testing Bond Performance of Bonded Anchors" as applicable, conducted by a qualified testing and inspecting agency.

b. Type: Cast-in-place anchors.

c. Type: Post-installed expansion anchors.

d. Corrosion Protection: Stainless-steel components complying with ASTM F 593 "Standard Specification for Stainless Steel Bolts, Hex, Cap Screws and Studs" and ASTM F 594 "Standard Specification for Stainless Steel Nuts" or ISO 3506-2:1997 "Mechanical Properties of Corrosion-Resistant Stainless-Steel Fasteners-Nuts." Group 1 alloy 304 or 316 for bolts; alloy 304 or 316 for anchor.

2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190 "Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members", conducted by a qualified testing and inspecting agency.

E. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:

1. Zinc-Coated Carbon-Steel Wire: Comply with one of the following:

a. ASTM A 641/A 641M, "Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire", Class 1 zinc coating, soft temper.

2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire but, provide not less than 12-gauge, 0.08 inch (2.03-mm-) diameter wire.

F. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

G. Angle Hangers: Angles with legs not less than 7/8 inch (22 mm) wide; formed with 0.04 inch- (1-mm-) thick, galvanized steel sheet complying with coating designation from one of the following standards; Provide bolted connections and 5/16-inch (8-mm-) diameter bolts.

1. ASTM A 653/A 653M "Standard specification for Sheet Steel, zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by the Hot Dip Process"; Z275.

H. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.

I. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in-place.

J. Hold-Down Clips: Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches (610 mm) on center on all cross tees.

K. Impact Clips: Where indicated, provide manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

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

3.2 PREPARATION

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

3.3 INSTALLATION, GENERAL

A. General: Install acoustical panel ceilings to comply with one of the following:

1. ASTM C 636 "Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels" and seismic requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.

2. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.

5. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, post-installed mechanical, or power-actuated fasteners that extend through forms into concrete.

6. Space hangers not more than 48 inches (1200 mm) on center along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.

C. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

D. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.

2. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.

3. For reveal-edged panels on suspension system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension system surfaces and panel faces flush with bottom face of runners.

4. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

5. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions, unless otherwise indicated.

6. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.

B. Testing Services: Testing and inspecting of completed installations of acoustical panel ceiling hangers shall take place in successive stages, in areas of extent and using methods as follows. Do not proceed with installations of acoustical panel ceiling hangers for the next area until test results for previously completed installations of acoustical panel ceiling hangers show compliance with requirements.

C. Extent of Each Test Area: When installation of ceiling suspension systems on each floor has reached 20 percent completion but no panels have been installed.

1. Within each test area, testing agency will select 1 of every 10 power-actuated fasteners and post-installed anchors used to attach hangers to concrete and will test them for 890 N of tension; it will also select one of every 2 post-installed anchors used to attach bracing wires to concrete and will test them for 1957 N of tension.

2. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then, will resume initial testing frequency.

D. Remove and replace acoustical panel ceiling hangers where test results indicate that they do not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.5 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 54 26 - LINEAR WOOD WALLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes wood wall panels, including:

1. Wood wall cladding (WD-1).
2. Wood grille wall screen (WD-2).
3. Trim and accessories.
4. Delegated design.

B. Related Requirements:

1. Section 09 22 16 “Non-Structural Metal Framing” for framing.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer, approved by wood manufacturer, who has completed work similar in design and extent to that indicated for this Project and with a record of successful in-service performance.

B. Inspection: All work must pass inspection and approval of Architect or Owner’s Authorized Representative, as well as the local codes and regulations or authorities having jurisdiction.

C. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS

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

B. Samples: For verification of each type of exposed finish required, prepared on samples of size indicated below. Where finishes involve normal color and texture variations, include sample sets showing the range of variations expected.

1. 12 x 18 inch samples of each panel type, pattern, and color.

C. Shop Drawings: Provide Shop Drawings for all linear wood wall systems and product details.

D. Qualification Data: For professional engineer.

1.5 PROJECT CONDITIONS

A. Space Enclosure and Environmental Limitations: Do not install wood panels until spaces are enclosed and weatherproof, wet-work in spaces is completed and dry, work above wall panels is complete, and ambient temperature and humidity conditions are being maintained at the levels indicated for Project when occupied for its intended use.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery & Unloading: Coordinate crate sizes, weights, unloading options, and delivery schedule with manufacturer prior to fabrication. Deliver wood panels and suspension system components to Project site in original, unopened packages and store them in a fully enclosed space where

they will be protected against damage from moisture, direct sunlight, surface contamination, and other mistreatment.

B. Acclimatization: Before installing wood panels, permit them to reach room temperature and a stabilized moisture content (at least 72 hours) per AWI standards.

C. Handling: Handle wood grille wall panels carefully to avoid chipping edges or damaging units in any way.

D. Protection:

1. Personnel: Follow good safety and industrial hygiene practices during handling and installing of all products and systems, with personnel to take necessary precautions and wear appropriate protective equipment as needed. Read related literature for important information on products before installation. Contractor to be solely responsible for all personal safety issues during and subsequent to installation; Architect, Owner, and Manufacturer will rely on Contractor's performance in such regard.

2. Existing completed work: Protect completed work above suspension system from damage during installation of suspension system components.

1.7 EXTRA MATERIALS

A. Extra Materials: Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.

1. Wall Panels: Furnish quantity of full-size units equal to 2 percent of amount installed, but no less than 100 sf.

2. Attachment System Components: Furnish quantity of each component equal to 2 percent of amount installed, but no less than 100 sf.

1.8 WARRANTY

A. Warranties: Provide owner with a one (1) year warranty for material and workmanship on all installed products.

1. Manufacturers: All materials shall be warranted for (1) one year from date of Substantial Completion for material and workmanship.

2. Installer: All work shall be warranted for (1) year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.

2.2 WOOD WALL CLADDING, WD-1

A. Basis-of-Design Product: 3100 Acoustic Plank by 9Wood; www.9wood.com.

1. Product: No. 3116-2.

2. Veneer Species: Maple. White Maple, Rotary sliced veneer, matte finish

3. Edge Profile: Square.

4. Member Size: 3/4" by 7 9/16" by 8'-0".

B. Brackets and Trim Profiles:

1. Metal Trim, MT-1: Millwork Corner Key MWCK75 by Fry Reglet.
   a. Application: Outside corner.
2. Metal Trim, MT-2: Millwork Channel "L" Angle w/ Return Key - MWCL75 by Fry Reglet.
   a. Application: Horizontal reveal, as indicated in Drawings.
3. ~~Metal Trim, MT-3: Millwork Channel "X" Outside Corner w/ Return Key - MWCOSC75 by~~ Fry Reglet.
   a. ~~Application: Horizontal reveal, as indicated in Drawings.~~
4. Metal Trim Finish: As selected by Architect.

2.3 WOOD GRILLE WALL SCREEN, WD-2

A. Basis-of-Design Product: 1200 Dowel Grille by 9Wood; www.9wood.com.

1. Assembly Style: Cross piece backer.
2. Species and Cut: Western hemlock (Tsuga heterophylla).
3. Member Size: 1 3/8" face by 10'-0" length.
4. Member Depth and Spacing: As indicated in Drawings, or approved by Architect.
5. Finish: Clear, mixed grain, maple stain.
6. Reveal Scrim: Manufacturer's standard.
   a. Color: As selected by Architect.

2.4 METAL ATTACHMENT SYSTEMS, GENERAL

A. Attachment System: Manufacturer's recommended.

B. Attachment Devices: Attachments instead of screws; size for 3 times the design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

1. Basis-of-Design Product: T-Bolt by 9Wood.

C. Wire, Braces, Ties, Hanger Rods, Flat Hangers and Angle Hangers: Provide wires, rods and hangers that comply with applicable ASTM specifications.

D. Access Panels: Provide access panels of the same wood wall system utilizing the manufacturer's standard access hardware system to allow individual panels to be repetitively removed and reattached without damage to the access panel or adjacent panels. Ensure that the system maintains a uniform and uninterrupted pattern when access panels are installed in-place, without disruption or misalignment.

1. Scope of Accessible Panels:
   a. Provide panels at services and equipment locations and other locations as indicated.
2. Alternate Access Hardware: Caddy Clip ceiling/ acoustical supports and access systems by Erico, Div. of Pentair; www.erico.com.

PART 3 - EXECUTION

3.1 EXAMINATION

A. General: Examine substrates and structural framing to which walls attach or abut, with installer present, for compliance with requirements specified in this and other Sections that affect

installation and anchorage. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordination: Furnish layouts for cast-in-place anchors, clips, and other wall anchors whose installation is specified in other Sections.

B. Layout: Measure each wall area and establish the layout of panel to balance border widths at opposite edges. Avoid using less-than-half-width panels at borders, and conform to the layout indicated in Drawings in accordance with manufacturer’s approved Shop Drawings.

3.3 INSTALLATION

A. General: Install to comply with manufacturer's instructions.

B. Attachments: Attach hangers to building's structural members per manufacturer’s instructions and in compliance with all local codes and regulations.

C. Metal T-Bar Grid Installation: Install, align, brace, tie-off, mount, handle interferences, and space T-Grid in accordance with manufacturer’s instructions and in compliance with all local codes and regulations.

D. Panel Installation: Install Wood Grille wall panels in accordance with manufacturer’s installation instructions and in compliance with all local codes and regulations. Install with undamaged edges and fitted accurately to suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit, as required.

E. Suspension Runners Installation: Install suspension system runners so they are square and securely interlocked with one another. Install number and use on-center spacing per wood panel manufacturer’s instructions, as indicated on approved Shop Drawings and in compliance with all local codes.

3.4 CLEANING

A. General: Clean exposed wood surfaces of wall panels. Comply with manufacturer's instructions for cleaning and touchup of minor finish damage. Remove and replace wood wall components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 65 00 - RESILIENT FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Resilient flooring (RF-1).

B. Related Requirements:

1. Section 03 30 00 “Cast-in-Place Concrete” for substrate coordination.
2. Section 09 65 13 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet.

1.3 SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified, not less than 12 inches square.

C. Samples for Initial Selection: For each type of product indicated.

D. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.

E. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish not less than 2 percent of installed area, of each type, color, pattern, and size of resilient product installed.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.6 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Products shall comply 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. Basis-of-Design Manufacturer: Mannington Commercial; www.manningtoncommercial.com.

B. Other Acceptable Manufacturers:

1. Artigo, div. of Mondo Group; www.artigo.com.
2. Forbo; www.forbo.com.
3. Mondo Contract Flooring; www.mondocontractflooring.com.
4. Patcraft (non-vinyl); www.patcraft.com.

2.3 RESILIENT FLOORING

A. Resilient Flooring, Rubber, RF-1:

1. Basis-of-Design Product: Assurance III by Mannington Commercial.
2. Color: Dapple Grey.
3. Size: As indicated in Drawings.
4. Application: Catering and storage areas.

2.4 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

1. Adhesives shall have a VOC content of 50 g/L or less and 60 g/L or less for rubber stair treads.

C. Transition Strips: As specified in Section 09 65 13 “Resilient Base and Accessories.”

D. Floor Polish: Floor polish and protective sealers not permitted.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

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

1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates for Resilient Flooring: Prepare horizontal surfaces according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.

4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Relative Humidity Test: Using in-situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient products until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT FLOORING INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient flooring.

B. Allow resilient tile and sheets to stabilize before cutting and fitting.

C. Lay out resilient flooring as follows:

1. Maintain uniformity of flooring direction.

2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in flooring substrates.

3. Match edges of flooring for color shading at seams.

4. Avoid cross seams.

D. Scribe and cut resilient flooring to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend resilient sheet flooring into toe spaces, door reveals, closets, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on resilient flooring as marked on substrates. Use chalk or other nonpermanent marking device.

G. Install resilient flooring on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of flooring installed on

covers and adjoining flooring. Tightly adhere flooring edges to substrates that abut covers and to cover perimeters.

H. Adhere resilient flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

I. Seamless Installation, Sheet Flooring:

1. Heat-Welded Seams: Comply with ASTM F 1516. Rout joints and heat weld with welding bead to fuse sections permanently into a seamless flooring installation. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.

2. Chemically Bonded Seams: Bond seams with chemical-bonding compound to fuse sections permanently into a seamless flooring installation. Prepare seams and apply compound to produce tightly fitted seams without gaps, overlays, or excess bonding compound on flooring surfaces.

J. Integral-Flash-Cove Base: Cove resilient sheet flooring to dimension indicated up vertical surfaces. Support flooring at horizontal and vertical junction with cove strip. Butt at top against cap strip.

K. Install metal corners at inside and outside corners.

3.4 RESILIENT BASE AND ACCESSORY INSTALLATION

A. As specified in Section 09 65 13 "Resilient Base and Accessories."

3.5 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.

2. Sweep and vacuum horizontal surfaces thoroughly.

3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION

SECTION 09 65 13 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Resilient wall base (RB).
2. Resilient floor transition.
3. Installation materials and accessories.

1.3 SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified, not less than 12 inches long.

C. Samples for Initial Selection: For each type of product indicated.

D. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.

E. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

1.6 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Products shall comply 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. Source Limitations: Obtain resilient base and accessories from single source from single manufacturer.

B. Thermoset vulcanized rubber (TS). PVC-free; phthalate-free; Red List-free. Meets FloorScore, NSF 332 Gold and CHPS criteria.

C. Basis-of-Design Manufacturer: Roppe; www.roppe.com.

D. Other Acceptable Manufacturers:

1. Tarkett: www.commercial.tarket.com

2. Flexco; www.flexcofloors.com.

2.3 RESILIENT WALL BASE

A. Basis-of-Design Manufacturer: Tarkett.

B. Product Standard: ASTM F1861, Type TP (rubber, thermoplastic).

C. Rubber Base, RB-1: Baseworks Series by Tarkett.

1. Size: 4 inches.

2. Style: Coved base.

3. Color: No. 63 Burnt Umber.

D. Rubber Base, RB-2: Millwork Series by Tarkett.

1. Product: Monument, No. MW-XX-S4.

2. Size: 4 inches.

3. Color: No. 63 Burnt Umber.

2.4 RESILIENT FLOOR TRANSITION

A. Basis-of-Design Product: #50 Tile/ Carpet Joiner by Roppe.

B. Height: 7/32 inch

C. Locations: Provide rubber molding accessories at areas indicated in Drawings.

D. Color: No. 175 Slate

2.5 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

1. Basis-of-Design Product: Ardex Feather Finish by Ardex Americas; www.ardexamericas.com.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

1. Adhesives shall have a VOC content of 50 g/L or less and 60 g/L or less for rubber stair treads.

C. Stair-Tread Nose Filler: Two-part epoxy compound recommended by resilient stair-tread manufacturer to fill nosing substrates that do not conform to tread contours.

D. Metal Edge Strips: Extruded aluminum with mill finish, nominal 2 inches wide, of height required to protect exposed edges of flooring, and in maximum available lengths to minimize running joints.

1. Flooring Transition, TRANS-1: Schiene by Schluter, stainless steel.

a. Finish: Anodized aluminum.

b. Application: Tile to carpet transition, tile base, or as indicated in Drawings.

2. Flooring Transition, TRANS-2: Dilex-AHK by Schluter, cove profile, pre-formed corners.

a. Finish: Anodized aluminum.

b. Application: Cove tile base, or as indicated in Drawings.

3. Flooring Transition, TRANS-3: RENO-U by Schluter.

a. Finish: Anodized aluminum.

b. Application: Resilient flooring to carpet transition, or as indicated in Drawings.

E. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient stair-tread manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

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

1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates for Resilient Stair Accessories: Prepare horizontal surfaces according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 10 pH.

4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

   a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.

   b. Relative Humidity Test: Using in-situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient products until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.

2. Sweep and vacuum horizontal surfaces thoroughly.

3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION

SECTION 09 68 00 - CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Carpet (CPT-1, CPT-2, WOM-1).

B. Related Requirements:

1. Section 03 30 00 "Cast-in-Place Concrete" for substrate coordination.
2. Section 09 65 13 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to carpet installation including, but not limited to, the following:
    a. Review delivery, storage, and handling procedures.
    b. Review ambient conditions and ventilation procedures.
    c. Review subfloor preparation procedures.

1.4 SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's written data on physical characteristics and durability.
2. Include manufacturer's written installation recommendations for each type of substrate.

B. Shop Drawings: For carpet installation, showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet.
2. Carpet type, color, and dye lot.
3. Locations where dye lot changes occur.
4. Seam locations, types, and methods.
5. Type of subfloor.
6. Type of installation.
7. Pattern type, repeat size, location, direction, and starting point.
8. Pile direction.
9. Types, colors, and locations of insets and borders.
10. Types, colors, and locations of edge, transition, and other accessory strips.
11. Transition details to other flooring materials.

12. Type of carpet cushion.

C. Samples for Verification: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet: 24-inch-square Sample, or full tile.

2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch-long Samples.

3. Carpet Cushion: 6-inch-square Sample.

4. Carpet Seam: 6-inch Sample.

5. Mitered Carpet-Border Seam: 12-inch-square Sample. Show carpet pattern alignment.

D. Product Schedule: For carpet and carpet cushion. Use same designations indicated on Drawings.

E. Sustainable Product Certification: Provide ANSI/NSF 140 certification for carpet products.

F. Qualification Data: For Installer.

G. Product Test Reports: For carpet and carpet cushion, for tests performed by a qualified testing agency.

1. Include verification of compatibility of carpet adhesives with project specific substrates.

H. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet to include in maintenance manuals. Include the following:

1. Methods for maintaining carpet, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.

2. Precautions for cleaning materials and methods that could be detrimental to carpet and carpet cushion.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. Confirm with Owner prior to purchasing.

B. Carpet Tiles: 10 percent of amount installed for each type indicated, but not less than one manufacturer's standard case or box.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Master II certification level.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockups at locations and in sizes shown on Drawings.

2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI's "CRI Carpet Installation Standard."

B. Deliver carpet in original mill protective covering with mill register numbers and tags attached.

1.9 FIELD CONDITIONS

A. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet and carpet cushion until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

C. Do not install carpet and carpet cushion over concrete slabs until slabs have cured, are sufficiently dry to bond with adhesive, and have pH range recommended by carpet manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet, install carpet before installing these items.

1.10 WARRANTY

A. Special Warranty for Carpet: Manufacturer agrees to repair or replace components of carpet installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet due to unusual traffic, failure of substrate, vandalism, or abuse.

2. Failures include, but are not limited to, the following:

a. More than 10 percent loss of face fiber, edge raveling, snags, and runs.

b. Loss of tuft bind strength.

c. Excess static discharge.

d. Delamination.

3. Warranty Period: 10 years from date of Substantial Completion.

B. Special Warranty for Carpet Cushion: Manufacturer agrees to repair or replace components of carpet cushion installation that fail in materials or workmanship within specified warranty period.

1. Warranty includes removal and replacement of carpet and accessories required by replacement of carpet cushion.

2. Warranty does not include deterioration or failure of carpet cushion due to unusual traffic, failure of substrate, vandalism, or abuse.

3. Failure includes, but is not limited to, permanent indentation or compression.

4. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Provide carpet materials and adhesives that are compatible with the following substrates:

1. Cast-in-place concrete slabs.

2. Gypsum underlayment.

2.2 CARPET PRODUCT

A. Modular Carpet Tile, CPT-1: Stockinette

1. Self Assembly Collection, ~~Continental~~ style by Mannington Commercial; www.manningtoncommercial.com.

2. Color: No. 15731 “Purl”, or as indicated in Drawings.

3. Pattern Type: Organic.
4. Fiber System: Antron Lumena DNA Type 6,6 Nylon.
5. Dye Method: Solution.
6. Pile Thickness: 0.136-inch.
7. Total Weight: 33 oz/sq. yd.
8. Construction Type: Pattern Loop.
9. Backing: Infinity 2 Modular.
10. Size: 12 by 48 inches.
11. Applications: As indicated in Drawings.

B. Modular Carpet Tile, CPT-2: Continental

1. Self Assembly Collection, ~~Stockinette~~ style by Mannington Commercial.
2. Color: No. 15731 “Purl”, or as indicated in Drawings.
3. Pattern Type: Organic.
4. Fiber System: Antron Lumena DNA Type 6,6 Nylon.
5. Dye Method: Solution.
6. Pile Thickness: 0.136-inch.
7. Total Weight: 33 oz/sq. yd.
8. Construction Type: Pattern Loop.
9. Backing: Infinity 2 Modular.
10. Size: 12 by 48 inches.
11. Applications: As indicated in Drawings.

C. Walk-Off Mat, WOM-1

1. Basis-of-Design Product: Ruffian II by Mannington Commercial.
2. Color: No. 1506 “Ebony Earth”, or as indicated in Drawings.
3. Fiber Content: 100 percent nylon 6, 6, solution dyed.
4. Dye Method: Solution.
5. Pile Thickness: 0.155 inch.
6. Face Weight: 38 ounces.
7. Construction Type: Non-Patterned Loop, Tip Sheared.
8. Backing: Infinity 2 Modular.
9. Size: 24 by 24 inches.
10. Applied Treatments: Soil-Resistance Treatment; manufacturer’s standard soil resistance treatment.
11. Applications: All level 1 vestibules.

2.3 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by sound underlayment manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet and is recommended or provided by carpet and underlayment manufacturers.

1. Where flooring is installed over gypsum cement underlayment, provide the following:

a. XL Brands adhesives; www.xlbrands.com.

1) Adhesive shall be approved for use over gypsum underlayment and compliant with gypsum underlayment warranty requirements.

C. Tackless Carpet Stripping: Water-resistant plywood, in strips as required to match cushion thickness and that comply with CRI's "CRI Carpet Installation Standard."

D. Seam Adhesive: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for sealing and taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.

E. Metal Edge/Transition Strips: Extruded aluminum with mill finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

F. Primer: Provide manufacturer recommended primer for porous substrates where required.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet performance.

B. Examine carpet for type, color, pattern, and potential defects.

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

3.2 PREPARATION

A. General: Comply with CRI's "CRI Carpet Installation Standard" and with carpet manufacturer's written installation instructions for preparing substrates.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch3 mm wide or wider, and protrusions more than 1/32 inch0.8 mm, unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive, carpet, and underlayment manufacturers.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet.

3.3 CARPET INSTALLATION

A. Comply with CRI's "CRI Carpet Installation Standard" and carpet and underlayment manufacturers' written installation instructions for the following:

1. Direct-glue-down installation.

2. Double-glue-down installation.

3. Carpet with attached-cushion installation.

4. Preapplied adhesive installation.

5. Stretch-in installation.

6. Stair installation.

B. Comply with carpet manufacturer's written instructions and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.

1. Stretch-in Carpet Installation: Install carpet cushion seams at 90-degree angle with carpet seams.

C. Install as indicated on Drawings.

D. Install borders with mitered corner seams.

E. Do not bridge building expansion joints with carpet.

F. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.

G. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

H. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet as marked on subfloor. Use nonpermanent, nonstaining marking device.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet:

1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.

2. Remove yarns that protrude from carpet surface.

3. Vacuum carpet using commercial machine with face-beater element.

B. Protect installed carpet to comply with CRI's "CRI Carpet Installation Standard."

C. Protect carpet against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods recommended in writing by carpet manufacturer and underlayment manufacturer and carpet adhesive manufacturer.

END OF SECTION

SECTION 09 84 33 - SOUND-ABSORBING WALL UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Acoustic fabric-wrapped panels (AWP-2).

B. Related Requirements:

1. Section 09 29 00 “Gypsum Board” for preparation of substrate for wall panels, AWP-2.
2. Section 10 22 39 “Folding Panel Partitions” for provision and installation of fabric for panels, AWP-1.

1.3 SUBMITTALS

A. Product Data: For each type of product.

1. Include facing, panel edge, core material, and mounting indicated.

B. Shop Drawings: For unit assembly and installation.

1. Include elevations, sections, and mounting devices and details.

C. Samples for Verification: For the following products:

1. Core Material: 12-inch-square Sample at corner.
2. Mounting Devices: Full-size Samples.

D. Coordination Drawings: Interior elevations, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Electrical outlets.
2. Structural members to which mounting devices will be attached.
3. Items penetrating or covered by sound-absorbing units, including the following:
    a. Lighting fixtures.
    b. Air outlets and inlets.
    c. Alarms.
    d. Sprinklers.
    e. Access panels.
4. Show operation of hinged and sliding components covered by or adjacent to units.

E. Qualification Data:

1. For professional engineer.
2. For acoustical testing agency.

F. Product Certificates: For each type of unit.

G. Sample Warranty: For manufacturer's special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of unit to include in maintenance manuals. Include fabric manufacturer's written cleaning and stain-removal instructions.

1.5 QUALITY ASSURANCE

A. Engineer Qualifications: Qualified professional engineer responsible for delegated design.

B. Acoustical Testing Agency Qualifications: An independent testing laboratory, or an NVLAP-accredited laboratory, with the experience and capability to conduct the testing indicated. NVLAP-accredited laboratories must document accreditation, based on a "Certificate of Accreditation" and a "Scope of Accreditation" listing the test methods specified.

C. Source Limitations:

1. Acoustical Wall Units: Obtain each type through one source from a single manufacturer.

2. Suspension System: Obtain each type through one source from a single manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with fabric and unit manufacturers' written instructions for minimum and maximum temperature and humidity requirements for shipment, storage, and handling.

B. Deliver materials and units in unopened bundles and store in a temperature-controlled dry place with adequate air circulation.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not install units until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work at and above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Air-Quality Limitations: Protect units from exposure to airborne odors, such as tobacco smoke, and install units under conditions free from odor contamination of ambient air.

C. Field Measurements: Verify unit locations and actual dimensions of openings and penetrations by field measurements before fabrication and indicate them on Shop Drawings.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace units and components that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Acoustical performance.

b. Fabric sagging, distorting, or releasing from panel edge.

c. Warping of core.

2. Warranty Period: Two (2) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Products shall comply 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."

B. Fire-Test-Response Characteristics: Units shall comply with "Surface-Burning Characteristics" or "Fire Growth Contribution" Subparagraph below, or both, as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Surface-Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 25 or less.

b. Smoke-Developed Index: 450 or less.

2. Fire Growth Contribution: Comply with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 286.

2.2 ACOUSTIC FABRIC-WRAPPED PANEL, AWP-2

A. Fabric-Wrapped Wall Panel: Manufacturer's standard panel construction consisting of facing material stretched over front face of edge-framed core and bonded or attached to edges and back of frame.

1. Basis-of-Design Manufacturer: Jasco; www.jasco-usa.com.

2. Mounting: Back mounted with manufacturer's standard metal clips or adhesive-mounted to substrate.

3. Core: Fiberglass; 6 psf.

4. Edge Construction: Manufacturer's standard chemically hardened core with no frame.

5. Edge Profile: Chemically-hardened square edge.

6. Corner Detail in Elevation: Square with continuous edge profile indicated.

7. Acoustical Performance: Sound Absorption NRC 0.90 minimum, according to ASTM C423 for Type A mounting according to ASTM E795.

8. Nominal Overall Panel Thickness: 1 inch.

9. Panel Width: As indicated on Drawings.

10. Panel Height: As indicated on Drawings.

11. Fabric Material:

a. Basis-of-Design Product: Xorel Meteor by Carnegie, www.carnegiefabrics.com.

b. Product: No. 6427.

c. Color: No. 703.

2.3 MATERIALS

A. Core Materials:

1. Polyester-Fiber Board: Manufactured from 100% polyester; 56% post-consumer recycled content; 100% recyclable; water-resistant; 6 lb. density core; 12 lb. density face.

2. Provide material that is one of the following to avoid visibility of core through finish fabric: White color, white-coated, or wrapped in white fabric.

B. Lining Material As selected by Architect from manufacturer's full range.

1. Color: White.

C. Mounting Devices: Concealed on back or top edge of unit, recommended by manufacturer to support weight of unit.

2.4 FABRICATION

A. Standard Construction: Use manufacturer's standard construction unless otherwise indicated, with facing material applied to face, edges, and back border of dimensionally stable core and with rigid edges to reinforce panel perimeter against warpage and damage.

B. Measure each area and establish layout of panels and joints of sizes indicated on Drawings within a given area.

C. Dimensional Tolerances of Finished Units: Plus or minus 1/16 inch for the following:

1. Thickness.

2. Edge straightness.

3. Overall length and width.

4. Squareness from corner to corner.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fabric, fabricated units, substrates, areas, and conditions for compliance with requirements, installation tolerances, and other conditions affecting unit performance.

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

3.2 INSTALLATION

A. Install units in locations indicated. Unless otherwise indicated, install units with edges in alignment with walls and other units, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.

B. Comply with manufacturer's written instructions for installation of units using type of mounting devices indicated. Mount units securely to supporting substrate.

C. All wall-mounted devices need to be extended out from framing and face-mounted on sound-absorbing wall panels; no cutouts.

3.3 INSTALLATION TOLERANCES

A. Variation from Level or Slope: Plus or minus 1/8 inch.

B. Variation of Joint Width: Not more than 1/16-inch wide from reveal line in 48 inches, noncumulative.

3.4 CLEANING

A. Clip loose threads; remove pills and extraneous materials.

B. Clean panels on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions.

END OF SECTION

SECTION 09 91 00 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes surface preparation and field painting of exposed items and surfaces, except as indicated in the Related Requirements article below.

1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections. Interior substrates include:

a. Gypsum wall and ceiling board.

b. Wood.

c. Hollow-metal work, factory-primed.

d. Steel.

2. Paint schedule for all finish colors in Project.

B. 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.

C. 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. Finished mechanical and electrical equipment.

d. Light fixtures.

2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:

a. Furred areas.

b. Ceiling plenums.

3. Finished metal surfaces include the following:

a. Anodized aluminum.

b. Stainless steel.

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.

D. Products and materials in this Section have been selected for indoor chemical and pollutant source control and/ or low-VOC emitting characteristics.

1.3 DEFINITIONS

A. Volatile Organic Compounds (VOCs): Compounds as defined by the U.S. Environmental Protection Agency (EPA) in 40 CFR § 51.100 (s), (1).

B. Anti-Corrosive Paints: Coatings formulated and recommended for use in preventing the corrosion of ferrous metal substrates.

1.4 SUBMITTALS

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

B. Samples for Initial Selection: For each type of topcoat product indicated.

C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.

2. Step coats on Samples to show each coat required for system.

3. Label each coat of each Sample.

4. Label each Sample for location and application area.

D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.

1.5 PROJECT CONDITIONS

A. 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.

B. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 95 deg F.

C. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 95 deg F.

D. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Volatile Organic Compounds (VOCs): Provide paint products of zero VOCs or low VOCs for all interior surfaces, when available.

2.2 MANUFACTURERS

A. Preferred, Local Manufacturer:

1. Miller Paint; www.millerpaint.com.

B. Other Acceptable Manufacturers:

1. Benjamin Moore & Co.; www.benjaminmoore.com.
2. Diamond Vogel; www.diamondvogel.com.
3. PPG Architectural Coatings; corporate.ppg.com.
4. Pratt & Lambert; www.prattandlambert.com.
5. Rodda paint; www.roddapaint.com.
6. Scuffmaster, Div. of Master Coating Technologies, Inc.; www.scuffmaster.com.
7. Sherwin-Williams Co.; www.sherwin-williams.com.
8. The Valspar Corp., Architectural; www.valspar.com.

2.3 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.

C. Chemical Components of Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions.

1. The following chemicals shall not be used as an ingredient in any of the paints or coatings applied indoors and on-site:

a. Aromatic Compounds: The product must contain no more than 1.0% by weight of the sum total of aromatic compounds.

b. Halomethanes: Methylene Chloride.

c. Chlorinated Ethanes: 1,1,1-trichloroethane.

d. Aromatic Solvents: Benzene, Toluene (methylbenzene), Ethylbenzene.

e. Chlorinated Ethylenes: Vinyl Chloride.

f. Polynuclear Aromatics: Naphthalene.

g. Chlorobenzenes: 1,2-dichlorobenzene.

h. Phthalate Esters: di (2-ethylhexyl) phthalate, butyl benzyl phthalate, di-n-butyl phthalate, di-n-octyl phthalate, diethyl phthalate, dimethyl phthalate.

i. Miscellaneous Semi-Volatile Organics: Isophorone. Metals and their compounds: Antimony, Cadmium, Hexavalent Chromium, Lead, Mercury.

j. Preservatives (Anti-Fouling Agents): Formaldehyde.

k. Ketones: Methyl ethyl ketone, Methyl isobutyl Ketone.

l. Miscellaneous Volatile Organics: Acrolein, Acrylonitrile.

2. Volatile Organic Compounds: The volatile organic compound (VOC) concentrations (in grams per liter) of the paint or coating shall not exceed those listed below if the paint or coating is applied indoors, on-site. VOCs shall be tested in accordance with the U.S. Environmental Protection Agency (EPA) Test Method 24. The calculation of VOC shall exclude water, exempt solvents, and tinting color added at the point of sale.

   a. Flat Interior Coatings: 50 g/L.

   b. Non-Flat Interior Coatings: 150 g/L.

   c. Gloss Anti-Corrosive Interior Coatings: 250 g/L.

   d. Semi-Gloss Anti-Corrosive Interior Coatings: 250 g/L.

   e. Flat Anti-Corrosive Interior Coatings: 250 g/L.

   f. Bond Breaker Coatings: 350 g/L.

   g. Concrete Curing Compounds: 350 g/L.

   h. Floor Coatings: 250 g/L.

   i. Flow Coatings: 420 g/L.

   j. Form Release Compounds: 250 g/L.

   k. Pre-Treatment Wash Primers Coatings: 420 g/L.

   l. Sanding Sealers (Non-Lacquer): 350 g/L.

   m. Shellacs, Clear: 730 g/L.

   n. Shellacs, Opaque: 550 g/L.

   o. Specialty Primers, Sealers, and Under coaters: 350 g/L.

   p. Stains: 250 g/L.

   q. Varnishes: 350 g/L.

   r. Waterproofing Sealers: 250 g/L.

   s. Waterproofing Sealers, Concrete/Masonry: 400 g/L.

   t. Wood Preservatives: 350 g/L.

2.4 PREPARATORY COATS

A. Concrete Unit Masonry Block Filler: High-performance latex block filler of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.

B. Interior Primer: Interior latex-based or alkyd primer of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.

   1. Ferrous-Metal Substrates: Quick drying, rust-inhibitive metal primer.

   2. Zinc-Coated Metal Substrates: Galvanized metal primer.

   3. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with procedures specified in PDCA P4 for inspection and acceptance of surfaces to be painted.

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.

C. 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.

D. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and reprime.

2. Cementitious Materials: Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

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. Blast steel surfaces clean as recommended by paint system manufacturer and according to SSPC-SP 6/NACE No. 3, SSPC-SP 10/NACE No. 2.

b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.

c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.

5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

E. Material Preparation:

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.

F. Exposed Surfaces: Include 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.

1. 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.

2. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.

3. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.

4. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.

G. Sand lightly between each succeeding enamel or varnish coat.

H. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. Omit primer over metal surfaces that have been shop primed and touchup painted.

2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.

I. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

J. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.

K. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.

L. 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.

M. 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.

N. 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.

3.2 CLEANING AND PROTECTING

A. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

B. 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.

C. 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.

3.3 INTERIOR PAINT SYSTEM SCHEDULE

A. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed to view, with paint compatible with substrate:

a. Plywood backing.

b. Uninsulated metal piping.

c. Uninsulated plastic piping.

d. Pipe hangers and supports.

e. Metal conduit.

f. Plastic conduit.

g. Tanks that do not have factory-applied final finishes.

B. Exposed Structure, Ceilings: Where scheduled to be painted.

1. System: One coat modified acrylic dryfall.

2. Verify substrate and acceptable product.

C. Interior Steel Fabrications and Steel Doors and Frames (Factory primed):

1. System: Two coats, water-based alkyd enamel finish.

2. Sheen: Semi-gloss.

D. Gypsum Board Substrates:

1. Acrylic Latex System, institutional low odor/ VOC.

a. Prime/Sealer Coat: Latex, interior.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior.

2. Sheen:

a. Walls: Eggshell.

b. Ceilings: Flat.

E. Gypsum Board Substrates: Moisture-resistant finish; At janitor, mechanical, restrooms and toilet rooms:

1. System:

a. Prime Coat: Acrylic, interior.

b. Intermediate Coat: Match topcoat.

c. Topcoat: Waterborne epoxy coating, interior.

2. Sheen:

a. Walls: Semi-gloss.

b. Ceilings: Flat.

F. Spray-Textured Ceiling Substrates:

1. Latex, Flat System: Spray applied:

a. Prime Coat: Matching topcoat.

b. Topcoat: Interior, latex, flat.

G. Acoustic Panels and Tiles:

1. Latex System:

a. Prime Coat: Matching topcoat.

b. Intermediate Coat: Matching topcoat.

c. Topcoat: Interior, latex, low odor/VOC, flat.

H. Wood Substrates:

1. Latex over Latex Primer System:

a. Prime Coat: Primer, latex, for interior wood.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior.

2. Sheen: Semi-gloss.

3.4 COLOR SCHEDULE

A. Coordinate finish colors with systems indicated in other Sections.

B. Basis-of-Design Manufacturer is for color only. Provide color match where different paint manufacturer is used.

C. Where surfaces are scheduled for primer only, provide primer indicated for substrate in systems listed above.

P#	BASIS-OF-COLOR MANUF'R	COLOR	SHEEN
P-1	As selected by Architect	To match existing.	As indicated for substrate and application.
P-2	Sherwin Williams	No. SW 7757 "High Reflective White"	As indicated for substrate and application.
P-3	Sherwin Williams	No. SW 7757 "High Reflective White"	As indicated for substrate and application.

P#	BASIS-OF-COLOR MANUF'R	COLOR	SHEEN
P-4	Rodda	No. 0626 "Blue Depths"	As indicated for substrate and application.
P-5	Miller	No. 0211 "Light Lichen"	As indicated for substrate and application.
P-6	Rodda	No. 0625 "North Sea"	As indicated for substrate and application.
P-7	Sherwin Williams	No. SW 9133 "Jasper Stone"	As indicated for substrate and application.
P-8	Sherwin Williams	No. SW 7692 "Cupola Yellow"	As indicated for substrate and application.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 10 11 00 - VISUAL DISPLAY UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Magnetic porcelain marker boards (white board).

B. Related Requirements:

1. Section 09 22 16 “Non-Structural Metal Framing” for light gauge metal framing and blocking in interior to secure visual display units.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, finishes, and accessories for visual display units.
2. Include electrical characteristics for motorized units.

B. Shop Drawings: For visual display units.

1. Include plans, elevations, sections, details, and attachment to other work.
2. Show locations of panel joints.
3. Include sections of typical trim members.

C. Samples for Initial Selection: For each type of visual display unit indicated, for units with factory-applied color finishes, and as follows:

1. Samples of facings for each visual display panel type, indicating color and texture.
2. Fabric swatches of fabric facings for tackable surfaces.
3. Include accessory Samples to verify color selected.

D. Samples for Verification: For each type of visual display unit indicated.

1. Visual Display Panel: Not less than 8-1/2 by 11 inches, with facing, core, and backing indicated for final Work. Include one panel for each type, color, and texture required.
2. Rail or Modular Support System: 6-inch-long sections.
3. Accessories: Full-size Sample of each type of accessory.

E. Product Schedule: For visual display units. Use same designations indicated in Drawings.

F. Qualification Data: For qualified Installer.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for surface-burning characteristics.

H. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-fabricated visual display units completely assembled in one piece. If dimensions exceed maximum manufactured unit size, or if unit size is impracticable to ship in one piece, provide two or more pieces with joints in locations indicated on approved Shop Drawings.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install visual display units until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

B. Field Measurements: Verify actual dimensions of construction contiguous with visual display units by field measurements before fabrication.

1. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

1.8 WARRANTY

A. Markerboards Special Warranty: Written, signed by manufacturer; agree to replace porcelain enamel markerboards that do not retain their original writing and erasing qualities, including crazing, cracking, and flaking, or are otherwise defective, for the lifetime of the installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.

2. Smoke-Developed Index: 50 or less.

2.2 MATERIALS

A. Porcelain-Enamel Face Sheet: PEI-1002, with face sheet manufacturer's standard two- or three-coat process.

B. Hardboard: ANSI A135.4, tempered.

C. Particleboard: ANSI A208.1, Grade M-1.

D. Medium-Density Fiberboard: ANSI A208.2, Grade 130.

E. Fiberboard: ASTM C 208 cellulosic fiber insulating board.

F. Extruded Aluminum: ASTM B 221 (ASTM B 221M), Alloy 6063.

G. Adhesives for Field Application: Mildew-resistant, nonstaining adhesive for use with specific type of panels, sheets, or assemblies; and for substrate application; as recommended in writing by visual display unit manufacturer.

H. Primer/Sealer: Mildew-resistant primer/sealer complying with requirements in Section 09 91 00 “Painting” and recommended in writing by visual display unit manufacturer for intended substrate.

2.3 WHITE BOARD

A. Magnetic Porcelain Marker Board Assemblies: Porcelain-faced; laminated with backer.

1. Basis-of-Design Product: Provide 800 Series Whiteboard by Claridge Products; www.claridgeproducts.com.

a. Size: 4 feet by 8 feet.

b. Infill: LCS3 Porcelain.

c. Panel Joints: Concealed spline.

d. Color: Manufacturer’s standard “White” color as approved by Architect.

e. Trim: Aluminum; manufacturer’s standard profiles as selected by Architect.

f. Mounting Method: As recommended by the manufacturer for substrate.

g. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch-thick, extruded aluminum; of size and shape indicated on Drawings.

1) Finish: Satin clear anodized finish, or as selected by Architect.

h. Accessories: Extruded aluminum, full-length marker tray and tack strip; finish to match frame.

B. Joints: Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, as indicated on approved Shop Drawings.

C. Combination Assemblies: Provide manufacturer's standard exposed trim between abutting sections of visual display panels, as indicated on approved Shop Drawings.

2.4 GENERAL FINISH REQUIREMENTS

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: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.5 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.

B. Examine roughing-in for electrical power systems to verify actual locations of connections before installation of motorized, sliding visual display units.

C. Examine walls and partitions for proper preparation and backing for visual display units.

D. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.

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

3.2 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.

B. Clean substrates of substances, such as dirt, mold, and mildew, that could impair the performance of and affect the smooth, finished surfaces of visual display boards.

C. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display units and wall surfaces.

D. Prime wall surfaces indicated to receive visual display units and as recommended in writing by primer/sealer manufacturer and visual display unit manufacturer.

E. Prepare recesses for sliding visual display units as required by type and size of unit.

3.3 INSTALLATION

A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

B. Field-Assembled Visual Display Board Assemblies: Coordinate field-assembled units with grounds, trim, and accessories indicated. Join parts with a neat, precision fit.

1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, as indicated on approved Shop Drawings.

2. Where size of visual display board assemblies or other conditions require support in addition to normal trim, provide structural supports or modify trim as indicated or as selected by Architect from manufacturer's standard structural support accessories to suit conditions indicated.

C. Factory-Fabricated Visual Display Board Assemblies: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display board assemblies with fasteners at not more than 16 inches o.c. Secure tops and bottoms of boards to walls.

D. Visual Display Board Assembly Mounting Heights: Install visual display units at mounting heights indicated on Drawings.

E. Markerboard Panels: Attach panels to wall surface with egg-size adhesive gobs at 16 inches o.c., horizontally and vertically.

1. Join adjacent panels with concealed steel splines for smooth alignment.

2. Join adjacent panels with exposed, H-shaped aluminum trim painted to match wall panel.

3.4 CLEANING AND PROTECTION

A. Clean visual display units according to manufacturer's written instructions. Attach one removable cleaning instructions label to visual display unit in each room.

B. Touch up factory-applied finishes to restore damaged or soiled areas.

C. Cover and protect visual display units after installation and cleaning.

END OF SECTION

SECTION 10 14 00 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Code-required room identification signs.
2. Code-required stair identification signs.
3. Code-required egress signs, except lighted egress signage.

B. Related Requirements:

1. Division 26 “Electrical” for lighted egress signage.

1.3 SUBMITTALS

A. Product Data: For information only, include manufacturer’s printed specifications, anchorage details and installation, and maintenance instructions for products to be used in the fabrication of signage and graphics work, and installation instructions for each type of sign and graphic unit.

B. Shop Drawings: For manufacturing including plans, elevations, sections, details, fabrication and erection of signs and graphic work at not less than 1:20 scale. Show jointage, anchorage, accessory items, and finishes. Submit full-scale drawings of typical sign faces showing copy layout. Half-scale drawings shall be sufficient for sign faces 1 m by 1 m and larger.

C. Samples for Initial Selection: For each type of sign indicated.

1. Aluminum: Samples of each finish type and color, on 150 mm long sections of extrusions and not less than 100 mm squares of sheet or plate showing the full range of colors available
2. Acrylic and Polycarbonate Sheet: Samples of each paint and silkscreen ink color painted onto the required thickness of material.

D. For identification purposes, mark samples with the appropriate sign type application.

E. Manufacturer Certificates: Signed by manufacturers certifying that they comply with requirements.

F. Maintenance Data.

1.4 QUALITY ASSURANCE

A. Installer Qualifications.

1.5 WARRANTY

A. Special Warranty: Manufacturer Warranty Period of Five years.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Thermal Movements: For exterior signs, allow for thermal movements from ambient and surface temperature changes.

B. Accessibility Standard: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for signs.

2.2 SIGNS

A. Panel Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles. Provide signs as indicated in Drawings.

B. Room-Identification Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles. Provide signs as indicated in Drawings.

C. Interior Informational Signs: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles. Provide signs as indicated in Drawings.

D. Emergency Evacuation Maps: Provide code required signage to meet occupancy.

E. Interior Wayfinding Signage: Hanging directional sign as indicated in Drawings.

2.3 SIGNAGE MATERIALS

A. Aluminum Sheet and Plate: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

B. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

C. Steel Materials:

1. Metallic-Coated Steel Sheet: ASTM A 653, G90 coating, either commercial or forming steel.

2. Steel Sheet: Uncoated, cold-rolled, ASTM A 1008, commercial steel, Type B, exposed electrolytic zinc-coated, ASTM A 879, Coating Designation 08Z, with steel-sheet substrate according to ASTM A 1008, commercial steel, exposed].

3. Steel Members Fabricated from Plate or Bar Stock: ASTM A 529 or ASTM A 572, 42,000-psi minimum yield strength.

D. Stainless-Steel Sheet: ASTM A 240 or ASTM A 666, Type 304, stretcher-leveled standard of flatness.

E. Acrylic Sheet: ASTM D 4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

F. Polycarbonate Sheet: ASTM C 1349, Appendix X1, Type II (coated, mar-resistant, UV-stabilized polycarbonate), with coating on both sides.

G. Fiberglass Sheet: Multiple laminations of glass-fiber-reinforced polyester resin with UV-light stable, colorfast, nonfading, weather- and stain-resistant, colored polyester gel coat, and with manufacturer's standard finish.

H. PVC Sheet: Manufacturer's standard, UV-light stable, PVC plastic.

I. Plastic-Laminate Sheet: NEMA LD 3, general-purpose HGS grade, 0.048-inch nominal thickness.

J. Vinyl Film: UV-resistant vinyl film of nominal thickness indicated, with pressure-sensitive, permanent adhesive on back; die cut to form characters or images as indicated and suitable for exterior applications.

K. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.4 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined.

B. Adhesive: As recommended by sign manufacturer.

C. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, with adhesive on both sides.

D. Magnetic Tape: Manufacturer's standard magnetic tape with adhesive on one side.

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

2.5 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

B. Surface-Engraved Graphics: Machine engrave characters and other graphic devices into panel surface indicated to produce precisely formed copy, incised to uniform depth.

C. Subsurface-Applied Graphics: Apply graphics to back face of clear face-sheet material to produce precisely formed image. Image shall be free of rough edges.

D. Shop- and Subsurface-Applied Vinyl: Align vinyl film in final position and apply to surface. Firmly press film from the middle outward to obtain good bond without blisters or fishmouths.

E. Signs with Changeable Message Capability: Fabricate signs to allow insertion of changeable messages as follows:

F. Brackets: Fabricate brackets, fittings, and hardware for bracket-mounted signs to suit sign construction and mounting conditions indicated. Modify manufacturer's standard brackets as required.

2.6 GENERAL FINISH REQUIREMENTS

A. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

B. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

2.7 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.

B. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

2.8 METALLIC-COATED STEEL FINISHES

A. Factory Prime Finish: After cleaning and pretreating, apply an air-dried primer compatible with the organic coating to be applied over it.

B. Baked-Enamel or Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils.

2.9 STEEL FINISHES

A. Factory Prime Finish: After surface preparation and pretreatment, apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer.

B. Baked-Enamel or Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils.

2.10 STAINLESS-STEEL FINISHES

A. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.

1. Directional Satin Finish: No. 4.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

B. Room-Identification Signs and Other Accessible Signage: Install in locations on walls as indicated and according to accessibility standard.

END OF SECTION

SECTION 10 14 19 - DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Cutout dimensional characters.

1.3 COORDINATION

A. Furnish templates for placement of electrical service embedded in permanent construction by other installers.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For dimensional letter signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
3. Show message list, typestyles, graphic elements, and layout for each sign

C. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:

1. Dimensional Characters: Half-size Sample of dimensional character.
2. Exposed Accessories: Full-size Sample of each accessory type.

D. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

1.5 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.8 FIELD CONDITIONS

A. Field Measurements: Verify locations of electrical service embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of finishes beyond normal weathering.

b. Separation or delamination of sheet materials and components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 DIMENSIONAL CHARACTERS

A. Cutout Characters: Characters with uniform faces, square cut, sharp corners, and precisely formed lines and profiles, and as follows:

1. 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:

a. A.R.K. Ramos.

b. ACE Sign Systems, Inc.

c. APCO Graphics, Inc.

d. Diskey Architectural Signage Inc.

e. Gemini Incorporated.

f. Matthews International Corporation; Bronze Division.

g. Metal Arts.

h. Metallic Arts.

i. Southwell Company (The).

2. Character Material: Cast aluminum.

3. Character Height: 6 inches, or as indicated in Drawings.

4. Thickness: Manufacturer's standard for size of character.

5. Finishes:

a. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard, in color as selected by Architect from manufacturer's full range.

6. Mounting: Projecting studs.

7. Typeface: As selected by architect.

2.2 DIMENSIONAL CHARACTER MATERIALS

A. Aluminum Sheet and Plate: ASTM B 209 (ASTM B 209M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

2.3 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.

2. For exterior exposure, furnish stainless-steel devices unless otherwise indicated.

3. Exposed Metal-Fastener Components, General:

   a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.

4. Sign Mounting Fasteners:

   a. Projecting Studs: Threaded studs with sleeve spacer, welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.

2.4 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.

2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.

3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.

4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.

5. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

2.5 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

2.6 ALUMINUM FINISHES

A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils (0.04 mm). Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

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 signage work.

B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

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

3.2 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.

2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.

3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

B. Mounting Methods:

1. Projecting Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.

a. Thin or Hollow Surfaces: Place spacers on studs, place sign in position with spacers pinched between sign and substrate, and install washers and nuts on stud ends projecting through opposite side of surface, and tighten.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION

SECTION 10 22 39 - FOLDING PANEL PARTITIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Manually operated, acoustical panel partitions.
2. Delegated design.

B. Related Requirements:

1. Section 01 61 16 "Delegated Design Requirements".
2. Section 05 50 00 "Metal Fabrications" for supports that attach supporting tracks to overhead structural system.
3. Section 09 29 00 "Gypsum Board" for partition assemblies and sound barrier construction above the ceiling at track.

1.2 DEFINITIONS

A. NIC: Noise Isolation Class.

B. NRC: Noise Reduction Coefficient.

C. STC: Sound Transmission Class.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For operable panel partitions.

1. Include plans, elevations, sections, details, numbered panel installation sequence, and attachments to other work.
2. Indicate stacking and operating clearances. Indicate location and installation requirements for hardware and track, blocking, and direction of travel.
3. Indicate tolerances of floor and ceiling construction affecting Work of this Section.

C. Samples for Verification: For each type of exposed material, finish, covering, or facing, prepared on Samples of size indicated below:

1. Panel Facing Material: Manufacturer's standard-size unit, not less than 3 inches square.
2. Panel Edge Material: Not less than 3 inches long.
3. Chair Rail: Manufacturer's standard-size unit, 6 inches long.
4. Hardware: One of each exposed door-operating device.

D. Delegated-Design Submittal: For operable panel partitions.

1. Include design calculations for seismic restraints for bracing tracks to structure above.

E. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Partition track, track supports and bracing, switches, turning space, and storage layout.

2. Suspended ceiling components.

3. Structural members to which suspension systems are attached.

4. Size and location of initial access modules for acoustical tile.

5. Plenum acoustical barriers.

F. Setting Drawings: For embedded items and cutouts required in other work, including support-beam, mounting-hole template.

G. Qualification Data: For qualified Installer and testing agency.

H. Seismic Qualification Certificates: For operable panel partitions, tracks, accessories, and components, from manufacturer. Include seismic capacity of partition assemblies to remain in vertical position during a seismic event and the following:

1. Basis for Certification: Indicate whether certification is based on analysis, testing, or experience data, according to ASCE/SEI 7.

2. Detailed description of partition anchorage devices on which the certification is based and their installation requirements.

I. Product Certificates: For each type of operable panel partition.

J. Product Test Reports: For each operable panel partition, for tests performed by a qualified testing agency.

K. Field quality-control reports.

L. Sample Warranty: For manufacturer's special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For operable panel partitions to include in maintenance manuals. In addition to requirements specified in Division 01, include the following:

1. Panel finish facings and finishes for exposed trim and accessories. Include precautions for cleaning materials and methods that could be detrimental to finishes and performance.

2. Seals, hardware, track, track switches, carriers, and other operating components.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Preparation of the opening shall conform to ASTM E557 "Standard Practice for Architectural Application and Installation of Operable Partitions."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protectively package and sequence panels in order for installation. Clearly mark packages and panels with numbering system used on Shop Drawings. Do not use permanent markings on panels.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of operable panel partitions that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Faulty operation of operable panel partitions.

b. Deterioration of metals, metal finishes, and other materials beyond normal use.

2. Warranty Period: Two years from date of Substantial Completion and as follows:

a. Suspension System: 5 years from date of Substantial Completion.

b. Hinges: Life of building.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 61 16 "Delegated Design Requirements," to design seismic bracing and connection of tracks to structure above.

B. Seismic Performance: Operable panel partitions shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the partition panels will remain in place without separation of any parts from the system when subjected to the seismic forces specified."

C. Acoustical Performance: Provide operable panel partitions tested by a qualified testing agency for the following acoustical properties according to test methods indicated:

1. Sound-Transmission Requirements: Operable panel partition assembly tested for laboratory sound-transmission loss performance according to ASTM E90, determined by ASTM E413, and rated for not less than the STC indicated.

2.2 OPERABLE ACOUSTICAL PANELS

A. Operable Acoustical Panels: Partition system, including panels, seals, finish facing, suspension system, operators, and accessories.

1. Basis-of-Design Product: Model 932 Acousti-Seal by Modernfold Inc.; www.modernfold.com.

B. Panel Operation: Manually operated, continuously-hinged panels.

C. Panel Construction: As required to support panel from suspension components and with reinforcement for hardware attachment. Fabricate panels with tight hairline joints and concealed fasteners. Fabricate panels so finished in-place partition is rigid; level; plumb; aligned, with tight joints and uniform appearance; and free of bow, warp, twist, deformation, and surface and finish irregularities.

D. Dimensions: Fabricate operable acoustical panel partitions to form an assembled system of dimensions indicated and verified by field measurements.

1. Panel Width: As indicated in Drawings.

E. STC: Not less than 50.

F. Panel Weight: 8 lb/sq. ft. nominal.

G. Panel Thickness: Not less than 4 inches.

H. Panel Materials:

1. Steel Frame: Steel sheet, manufacturer's standard 0.0641-inch nominal minimum thickness for uncoated steel.

2. Gypsum Board: ASTM C1396/ C1396M. 1/2-inch, tackable.

I. Panel Closure: Manufacturer's standard unless otherwise indicated.

1. Final Closure: Horizontally expanding panel edge with removable crank.

J. Hardware: Manufacturer's standard as required to operate operable panel partition and accessories; with decorative, protective finish.

1. Hinges: Concealed (invisible), full leaf butt hinges, welded to anchor plates. Visible hinges mounted into panel edge or vertical astragal are not acceptable.

K. Finish Facing: Fabric wall covering.

2.3 SEALS

A. General: Provide seals that produce operable panel partitions complying with performance requirements and the following:

1. Manufacturer's standard seals unless otherwise indicated.

2. Seals made from materials and in profiles that minimize sound leakage.

3. Seals fitting tight at contact surfaces and sealing continuously between adjacent panels and between operable panel partition perimeter and adjacent surfaces, when operable panel partition is extended and closed.

B. Vertical Seals: Deep-nesting, interlocking aluminum astragals mounted on each edge of panel, with continuous acoustical seal.

C. Horizontal Top Seals: Continuous, automatic operable top seals.

D. Horizontal Bottom Seals: Modernfold IA2 seals, automatic-mechanical, retractable, constant-force-contact seal exerting uniform constant pressure on floor when extended, ensuring horizontal and vertical sealing and resisting panel movement.

1. Automatically Operated for Acoustical Panels: Extension and retraction of bottom seal automatically operated by movement of partition, with operating range not less than 2 inches between retracted seal and floor finish.

2.4 PANEL FINISH FACINGS

A. General: Provide finish facings for panels that comply with indicated fire-test-response characteristics and that are factory applied to operable panel partitions with appropriate backing, using mildew-resistant nonstaining adhesive as recommended by facing manufacturer's written instructions.

1. Apply one-piece, seamless facings free of air bubbles, wrinkles, blisters, and other defects, with edges tightly butted, and with invisible seams complying with Shop Drawings for location, and with no gaps or overlaps. Horizontal butted edges and seams are not permitted. Tightly secure and conceal raw and selvage edges of facing for finished appearance.

2. Where facings with directional or repeating patterns or directional weave are indicated, mark facing top and attach facing in same direction.

B. Fabric Wall Covering, AWP-1: Manufacturer's standard fabric, from same dye lot, treated to resist stains.

1. Basis-of-Design Product: Xorel Meteor by Carnegie, www.carnegiefabrics.com.

2. Product: No. 6427.

3. Color: No. 703.

C. Cap-Trimmed Edges: Protective perimeter-edge trim with tight hairline joints concealing edges of panel and finish facing, finished as follows, as selected by Architect:

1. Aluminum: Finished with manufacturer's standard painted or powder-coated finishes in colors selected by Architect.

D. Trimless Edges: Fabricate exposed panel edges so finish facing wraps uninterrupted around panel, covering edge and resulting in an installed partition with facing visible on vertical panel edges, without trim, for minimal sightlines at panel-to-panel joints.

2.5 SUSPENSION SYSTEMS

A. Tracks: Steel mounted directly to overhead structural support, with adjustable steel hanger rods for overhead support, designed for operation, size, and weight of operable panel partition indicated. Size track to support partition operation and storage without damage to suspension system, operable panel partitions, or adjacent construction. Limit track deflection to no more than 0.10 inch between bracket supports. Provide a continuous system of track sections and accessories to accommodate configuration and layout indicated for partition operation and storage.

1. Provide Modernfold No. 17 suspension system smart track.

2. Head Closure Trim: As required for acoustical performance; primed for field finish.

B. Carriers: Trolley system as required for configuration type, size, and weight of partition and for easy operation; with ball-bearing wheels.

1. Multidirectional Carriers: Capable of negotiating intersections without track switches.

C. Track Intersections, Switches, and Accessories: As required for operation, storage, track configuration, and layout indicated for operable panel partitions, and compatible with partition assembly specified. Fabricate track intersections and switches from steel.

1. Curve-and-Diverter Switches: Allow radius turns to divert panels to an auxiliary track.

2. L Intersections: Allow panels to change 90 degrees in direction of travel.

3. T Intersections: Allow panels to pass through or change 90 degrees to another direction of travel.

4. X Intersections: Allow panels to pass through or change travel direction full circle in 90-degree increments, and allow one partition to cross track of another.

5. Multidirectional Switches: Adjustable switch configuring track into L, T, or X intersections and allowing panels to be moved in all pass-through, 90-degree change, and cross-over travel direction combinations.

6. Center carrier stop.

D. Steel Finish: Manufacturer's standard, factory-applied, corrosion-resistant, protective coating unless otherwise indicated.

2.6 ACCESSORIES

A. Storage Pocket Door: Full height at end of partition runs to conceal stacked partition; of same construction, thickness, and acoustical qualities as panels; complete with operating hardware and acoustical seals at soffit, floor, and jambs. Hinges in finish to match other exposed hardware.

1. Manufacturer's standard method to secure storage pocket door in closed position.

2. Storage Pocket Door Facing: Fiber reinforced laminate.

a. Basis-of-Design: Nevamar by Panolam, to be provided by manufacturer.

1) Color: No. NS952-SD Fossil Gray.

3. Rim Lock: Key-operated lock cylinder, keyed to master key system, to secure storage pocket door in closed position. Include two keys per lock.

B. Single Pass Doors:

1. Matching panel thickness and appearance; ADA-compliant, trimless and equipped with hardware for panic operation. Threshold not permitted.

C. Expandable Panel: Provide manufacturer's expandable panel with jamb, with 6 to 18 inches of travel. Finished to match panels.

D. Fixed Jambs: Provide manufacturer's 2-inch deep fixed jamb, with finish matching panels.

PART 3 - EXECUTION

3.1 EXAMINATION

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

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

3.2 INSTALLATION

A. General: Comply with ASTM E 557 except as otherwise required by operable panel partition manufacturer's written installation instructions.

B. Install operable panel partitions and accessories after other finishing operations, including painting, have been completed in area of partition installation.

C. Install panels from marked packages in numbered sequence indicated on Shop Drawings.

D. Broken, cracked, chipped, deformed, or unmatched panels are not acceptable.

E. Broken, cracked, deformed, or unmatched gasketing or gasketing with gaps at butted ends is not acceptable.

F. Light-Leakage Test: Illuminate one side of partition installation and observe vertical joints and top and bottom seals for voids. Adjust partitions for alignment and full closure of vertical joints and full closure along top and bottom seals.

3.3 ADJUSTING

A. Adjust operable panel partitions, hardware, and other moving parts to function smoothly, and lubricate as recommended by manufacturer.

B. Adjust storage pocket doors to operate smoothly and easily, without binding or warping.

C. Verify that safety devices are properly functioning.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain operable panel partitions.

END OF SECTION

SECTION 10 26 00 - WALL PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Corner guards (CG-1).

B. Related Requirements:

1. Section 08 71 00 "Door Hardware" for metal and plastic protective trim units, according to BHMA A156.6, used for armor, kick, mop, and push plates.
2. Section 09 91 00 “Painting” for finishing of wall protection.

1.3 SUBMITTALS

A. Product Data: Include construction details, material descriptions, impact strength, dimensions of individual components and profiles, and finishes for each impact-resistant wall protection unit.

B. Samples for Initial Selection: For each type of impact-resistant wall protection unit indicated.

C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

D. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

E. Include mounting and accessory components. Replacement materials shall be from same production run as installed units.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Source Limitations: Obtain impact-resistant wall protection units from single source from single manufacturer.

C. Product Options: Drawings indicate size, profiles, and dimensional requirements of impact-resistant wall protection units and are based on the specific system indicated. Refer to Section 01 40 00 "Quality Requirements."

1. 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. Surface-Burning Characteristics: Provide impact-resistant, plastic wall protection units with surface-burning characteristics as determined by testing identical products per ASTM E 84, NFPA 255, or UL 723 by UL or another qualified testing agency.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store impact-resistant wall protection units in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1. Maintain room temperature within storage area at not less than 70 deg F during the period plastic materials are stored.

2. Keep plastic sheet material out of direct sunlight.

3. Store plastic wall protection components for a minimum of 72 hours, or until plastic material attains a minimum room temperature of 70 deg F.

a. Store covers in a horizontal position.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install impact-resistant wall protection units until building is enclosed and weatherproof, wet work is complete and dry, and HVAC system is operating and maintaining temperature at 70 deg F for not less than 72 hours before beginning installation and for the remainder of the construction period.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of impact-resistant wall protection units that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures.

b. Deterioration of plastic and other materials beyond normal use.

2. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 WALL PROTECTION

A. Corner Guards, CG-1: Surface-mounted, metal corner guards. Fabricated as one piece from formed or extruded metal with formed edges.

1. Basis-of-Design Product: Stainless Steel Corner Guards by InPro.

a. Material: Product standard, Type 304 stainless steel.

b. Height: As indicated in Drawings.

c. Wing Size: As selected by Architect.

d. Finish: Satin No. 4, brushed finish.

e. Mounting: Adhesive.

2.2 MATERIALS

A. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304, stretcher-leveled standard of flatness.

B. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.

C. Adhesive: As recommended by impact-resistant plastic wall protection manufacturer and with a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

D. Adhesive: As recommended by impact-resistant plastic wall protection manufacturer and that complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 FABRICATION

A. Fabricate wall and door protection according to requirements indicated for design, performance, dimensions, and member sizes, including thicknesses of components.

B. Assemble components in factory to greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.

C. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

2.4 METAL FINISHES

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

1. Remove tool and die marks and stretch lines, or blend into finish.

2. Grind and polish surfaces to produce uniform finish, free of cross scratches.

3. Run grain of directional finishes with long dimension of each piece.

4. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

B. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Examine walls to which impact-resistant wall protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.

1. For impact-resistant wall protection units attached with adhesive or foam tape, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

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

3.2 PREPARATION

A. Complete finishing operations, including painting, before installing impact-resistant wall protection system components.

B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

A. General: Install impact-resistant wall protection units level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.

1. Provide splices, mounting hardware, anchors, and other accessories required for a complete installation.

a. Provide anchoring devices to withstand imposed loads.

b. Where splices occur in horizontal runs of more than 20 feet, splice aluminum retainers and plastic covers at different locations along the run, but no closer than 12 inches.

c. Adjust end and top caps as required to ensure tight seams.

B. Impact-Resistant Wall Covering: Install top and edge moldings, corners, and divider bars as required for a complete installation.

3.4 CLEANING

A. Immediately after completion of installation, clean plastic covers and accessories using a standard, ammonia-based, household cleaning agent.

B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION

SECTION 10 28 00 – RESTROOM ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Public-use restroom accessories.
2. Delegated design for grab bars.

B. Related Requirements:

1. Section 01 61 16 “Delegated Design Requirements”.
2. Section 06 10 00 “Rough Carpentry” for coordination of framing and blocking.
3. Section 09 22 16 “Non-Structural Metal Framing” for coordination of framing and backing.

1.3 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.

1.4 SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Include electrical characteristics.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.

C. Delegated-Design Submittal: For grab bars 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. Qualification Data:

1. For Professional Engineer.

E. Sample Warranty: For manufacturer's special warranties.

F. Maintenance Data: For accessories to include in maintenance manuals.

1.5 WARRANTY

A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, visible silver spoilage defects.

2. Warranty Period: 15 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Toilet-Compartment Occupancy-Indicator Systems: Manufacturer agrees to repair or replace toilet-compartment occupancy-indicator systems that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five (5) years from date of Substantial Completion.

C. Manufacturer's Special Warranty for Hand Dryers: Manufacturer agrees to repair or replace hand dryers that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion, except three (3) years for motor brushes.

1. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Structural Performance: Design accessories and fasteners to comply with the following requirements:

1. Grab Bars: Installed units are able to resist 250 lbf concentrated load applied in any direction and at any point.

2.2 OWNER-FURNISHED MATERIALS

A. Owner-Furnished, Contractor-Installed (OFCI) Materials: Paper towel dispenser, PTD-1.

2.3 RESTROOM ACCESSORIES

A. Source Limitations: Obtain restroom accessories from single source from single manufacturer.

B. Basis-of-Design Manufacturer: Bobrick Washroom Equipment, Inc.; www.bobrick.com.

C. Other Approved Manufacturers:

1. American Specialties, Inc.; www.americanspecialties.com.

2. Bradley Corp.; www.bradleycorp.com.

D. Toilet Tissue (Roll) Dispenser, TD-1:

1. Basis-of-Design Product: Model no. B-4288 ConturaSeries Surface-Mounted Multi-Roll Toilet Tissue Dispenser by Bobrick.

a. Finish: Stainless steel.

2. Coordinate with Division 10 “Specialties” for units installed at toilet partitions.

E. Paper Towel Dispenser, PTD-2:

1. Basis-of-Design Product: Model no. B-4262 ConturaSeries Surface-Mounted Paper Towel Dispenser with TowelMate by Bobrick.

a. Finish: Satin stainless steel.

F. Soap Dispenser, SD-1:

1. Basis-of-Design Product: Model no. B-4112 ConturaSeries Surface-Mounted Soap Dispenser by Bobrick.

a. Finish: Satin stainless steel.

G. Grab Bar, GB-#:

1. Basis-of-Design Product: Model no. B-5806 Series by Bobrick.

2. Mounting: Flanges with concealed fasteners; coordinate for concealed blocking.

3. Material: Stainless steel, 0.05 inch thick.

a. Finish: Smooth, ASTM A480 No. 4 finish (satin) on ends and slip-resistant texture in grip area.

4. Outside Diameter: 1-1/4 inches.

5. Configuration and Length: As indicated on Drawings.

6. Coordinate with Division 10 “Specialties” for units installed at toilet partitions.

H. Sanitary-Napkin Receptacle, NR-1:

1. Basis-of-Design Product: Model no. B-270 ConturaSeries Surface-Mounted Sanitary Napkin Disposal by Bobrick.

a. Finish: Satin stainless steel.

I. Seat-Cover Dispenser, SCD-1:

1. Basis-of-Design Product: Model no. B-4221 ConturaSeries Surface-Mounted Seat-Cover Dispenser by Bobrick.

a. Finish: Satin stainless steel.

J. Folding Shelf, FS-1:

1. Basis-of-Design Product: Model no. B-287 Folding Utility Shelf by Bobrick.

a. Finish: Satin stainless steel.

2. Coordinate with Division 10 “Specialties” for units installed at toilet partitions.

K. Mirror Unit, MR-1:

1. Basis-of-Design Product: Model no. B-165 Series by Bobrick.

2. Frame: Stainless steel channel, except provide stainless steel, fixed tilt where indicated in Drawings.

3. Size: As indicated on Drawings.

L. Coat Hook, CH-1:

1. Basis-of-Design Product: Model no. B76717 Single Robe Hook by Bobrick.

a. Finish: Satin stainless steel.

2.4 WARM-AIR HAND DRYERS

A. Electric Hand Dryer, EHD-1:

1. Basis-of-Design Product: Xlerator with ADA-Compliant Recess Kit by Excel Dryer, Inc.; www.exceldryer.com.

2. Mounting: Surface mounted; meeting accessibility requirements where required.

a. Protrusion Limit: Coordinate installation with accessibility requirements, ensure

installed unit protrudes maximum 4 inches from wall surface where required. Partially or fully recess as required or indicated.

3. Coordinate with Division 26 “Electrical” for power supply.

2.5 CHILDCARE ACCESSORIES

A. Source Limitations: Obtain each type of childcare accessory from single source from single manufacturer.

B. Basis-of-Design Manufacturer: Koala Kare Products; div. of Bobrick.; www.bobrick.com.

C. Other Approved Manufacturers:

1. American Specialties, Inc.; www.americanspecialties.com.

2. Bradley Corp.; www.bradleycorp.com.

3. Foundations Worldwide, Inc.; www.foundations.com.

D. Changing Station, BCS-1:

1. Basis-of-Design Product: Model no. KB110-SSWM by Koala Kare Products.

2. Description: Horizontal or Vertical unit as indicated that opens by folding down from stored position and with child-protection strap.

a. Engineered to support minimum of 250-lb static load when opened.

2.6 MATERIALS

A. Stainless Steel: ASTM A240 or ASTM A666, Type 304, 0.031-inch-minimum nominal thickness unless otherwise indicated.

B. Steel Sheet: ASTM A1008, Designation CS (cold rolled, commercial steel), 0.036-inch-minimum nominal thickness.

C. Galvanized-Steel Sheet: ASTM A653, with G60 hot-dip zinc coating.

D. Galvanized-Steel Mounting Devices: ASTM A153, hot-dip galvanized after fabrication.

E. Fasteners: Screws, bolts, and other devices of same material as accessory unit, unless otherwise recommended by manufacturer or specified in this Section, and tamper and theft resistant where exposed, and of stainless or galvanized steel where concealed.

F. Chrome Plating: ASTM B456, Service Condition Number SC 2 (moderate service).

G. Mirrors: ASTM C1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.7 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 Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Examination: Review locations to receive accessories; confirm blocking or backing appropriate to requirements is installed prior to proceeding.

B. 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.

1. Remove temporary labels and protective coatings.

C. Grab Bars: Install to comply with specified structural-performance requirements.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 10 44 00 - FIRE PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Fire-protection cabinets (FEC-1, FEC-2 and FEC-3).
2. Fire extinguishers.
3. Relocation of existing defibrillator equipment and cabinets (AED).

1.3 PREINSTALLATION CONFERENCE

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to fire-protection cabinets including, but not limited to, the following:
    a. Schedules and coordination requirements.

1.4 SUBMITTALS

A. Product Data: For each type of product. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed, semi-recessed, or surface-mounting method and relationships of box and trim to surrounding construction.

B. Shop Drawings: For fire-protection cabinets. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish required, prepared on Samples 6 by 6 inches square.

D. Product Schedule: For fire-protection cabinets. Indicate whether recessed, semi-recessed, or surface mounted. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function. Use same designations indicated on Drawings.

E. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.5 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers required by code are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

1.6 SEQUENCING

A. Apply decals and lettering on field-painted fire-protection cabinets after painting is complete.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.

B. Electrical Components, Devices, and Accessories: For wired alarms at fire-protection cabinets, listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. NFPA Compliance, Extinguishers: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

D. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1. Provide fire extinguishers approved, listed, and labeled by FM Global; where required.

E. The Basis-of-Design Product's performance criteria, product properties and attributes, including materials and methods used in fabrication of and/or the manufacturing process of individual components or for entire system, as indicated in manufacturers' current published product literature at the date of the Contract Documents, shall establish the minimum performance requirement for the Project, regardless of inclusion in This Section.

2.2 FIRE-PROTECTION CABINET FOR FIRE EXTINGUISHERS, FEC-1, FEC-2 AND FEC-3

A. Cabinet Type: Suitable for fire extinguisher.

1. Basis-of-Design Product: Cosmopolitan Series, Stainless Steel Fire Extinguisher Cabinet by JL Industries, div. of Activar Construction Products Group, Inc.; www.activarcpg.com/jl-industries.

B. Cabinet Construction: Nonrated, except where indicated otherwise.

1. Fire-Rated Cabinets: Provide fire-rated cabinets where located in fire-rated walls, matching wall rating designation. Rated cabinets shall match basis-of-design product indicated. Provide factory-drilled mounting holes.

C. Cabinet Material:

1. Recessed and Semi-Recessed Tubs: Cold-rolled steel sheet; powder coat finish; manufacturer's standard white color.

2. Surface-Mounted Tubs: No. 4 stainless steel, directional satin finish.

D. Door and Trim Construction: No. 4 stainless steel trim and flush cabinet door.

1. Recessed Cabinet, FEC-1: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend)

2. Semi-Recessed Cabinet, FEC-2: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face.

3. Surface-Mounted Cabinet, FEC-3: Cabinet box fully exposed and mounted directly on wall with no trim.

4. Door Style: Fully glazed panel with frame.

5. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

a. Provide manufacturer's standard zinc-plated handle and roller latch.

b. Provide manufacturer's standard continuous hinge.

E. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.

2. Door Lock: Manufacturer's standard, where required.

3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated or as directed by Architect.

a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."

1) Location: Applied to cabinet door.

2) Application Process: Die-Cut.

3) Lettering Color: Black.

4) Orientation: Vertical.

F. Materials:

1. Cold-Rolled Steel: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.

a. Finish: Baked enamel or powder coat.

2. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304.

a. Finish: ASTM A480/A480M No. 4 directional satin finish.

2.3 FIRE EXTINGUISHERS

A. Fire Extinguisher, for cabinets and wall mounted: Multipurpose dry-chemical type, industrial grade external cartridge operated multipurpose A-B-C portable dry chemical fire extinguishers in 10 lb. size. The extinguishers shall meet or exceed the U.L. ratings.

1. Basis-of-Design Product, Fire Extinguisher: Cosmic 10E by JL Industries.

2. Wall bracket mount or in cabinet, as indicated.

2.4 DEFIRBILLATOR EQUIPMENT AND CABINETS, AED

A. Coordinate with Drawings for relocation of existing defibrillator equipment and cabinets as indicated.

2.5 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

1. Weld joints and grind smooth.

2. Provide factory-drilled mounting holes.

3. Prepare doors and frames to receive locks.

4. Install door locks at factory.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.

1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.

2. Miter and weld perimeter door frames.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.6 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

E. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

1. Color and Gloss: Finished to match adjacent wall.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for cabinets to verify actual locations of piping connections before cabinet installation.

B. Examine walls and partitions for suitable framing depth and blocking where recessed and semi recessed cabinets will be installed.

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

3.2 PREPARATION

A. Prepare recesses for recessed and semi recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction, but no higher than the following.

1. Fire-Protection Cabinets Installation height: Install at height conforming to NFPA 10.

a. 54 inches above finished floor to top of cabinet.

B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.

1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semi recessed fire-protection cabinets.

2. Provide inside latch and lock for break-glass panels.

3. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. 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 and mounting bracket manufacturers.

E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 11 40 00 - FOODSERVICE EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes: Coordination of casework and utility connections for Owner-Furnished, Owner-Installed (OFOI) appliances, including:

1. Icemaker (ICE-1).
2. Refrigerator (REF-1, REF-2).
3. Hot Box (HB-1).

B. Related Requirements:

1. Section 06 41 00 “Architectural Casework” for coordination with casework.
2. Division 22 "Plumbing" Sections for coordinating connections with domestic water supply and waste plumbing.
3. Division 26 “Electrical” Sections for coordinating electrical connections.
4. Equipment Schedule in Drawings.

1.3 COORDINATION MEETINGS

A. Coordination Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Appliances: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Accessibility: Where appliances are indicated to comply with accessibility requirements, comply with applicable provisions in the DOJ's 2010 ADA Standards for Accessible Design, the ABA standards of the Federal agency having jurisdiction, and ICC A117.1.

C. Energy Star: Provide appliances that qualify for the EPA/ DOE Energy Star product-labeling program.

2.2 PRODUCTS

A. Refrigerator, REF-1: Owner-Furnished, Owner-Installed (OFOI).

1. FLM-27 TSL01 Full-Length Merchandiser by True.
2. Coordination of casework and utility connections for plumbing and power.

B. Refrigerator, REF-2: Existing, Owner-Furnished, Owner-Installed (OFOI).

1. Coordination of casework and utility connections for plumbing and power.

C. Commercial Icemaker, ICE-1: Owner-Furnished, Owner-Installed (OFOI).

1. NEO URF-140A by Manitowoc.

2. Coordination of casework and utility connections for plumbing and power.

D. Hot Box, HB-1: Owner-Furnished, Owner-Installed (OFOI).

1. As indicated in Equipment Schedule in Drawings, or as selected by Owner.

2. Coordination of casework and utility connections for plumbing and power.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Confirm substrates, areas, and conditions for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of appliances.

B. Coordinate roughing-in for piping systems to verify actual locations of piping connections before appliance installation.

END OF SECTION

SECTION 11 52 00 - AUDIO VISUAL EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Electrically operated, front-projection screens and controls (PS-1).

B. Related Requirements:

1. Section 05 50 00 "Metal Fabrications" for metal support framing for front-projection screens.
2. Section 06 10 53 "Miscellaneous Rough Carpentry" for wood backing for screen installation.

1.3 DEFINITIONS

A. Gain: Ratio of light reflected from screen material to that reflected perpendicularly from a magnesium carbonate surface as determined per SMPTE RP 94.

B. Half-Gain Angle: The angle, measured from the axis of the screen surface to the most central position on a perpendicular plane through the horizontal centerline of the screen where the gain is half of the peak gain.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show layouts and types of front-projection screens. Include the following:

1. Drop lengths.
2. Location of seams in viewing surfaces.
3. Location of screen centerline relative to ends of screen case.
4. Anchorage details, including connection to supporting structure for suspended units.
5. Details of juncture of exposed surfaces with adjacent finishes.
6. Location of wiring connections for electrically operated units.
7. Wiring diagrams for electrically operated units.
8. Accessories.

C. Samples for Initial Selection: For finishes of surface-mounted screen cases.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For front-projection screens to include in maintenance manuals.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Environmental Limitations: Do not deliver or install front-projection screens until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and temporary HVAC system

is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.7 COORDINATION

A. Coordinate layout and installation of front-projection screens with adjacent construction, including ceiling suspension systems, light fixtures, HVAC equipment, and partitions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Projection Screens: Obtain front-projection screens from single manufacturer. Obtain accessories, including necessary mounting hardware, from screen manufacturer.

2.2 ELECTRICALLY OPERATED, FRONT-PROJECTION SCREENS, PS-1

A. Recessed-Mounted, Metal-Encased, Electrically Operated Screens: Manufacturer's standard units consisting of recessed ceiling case, screen, motor, controls, mounting accessories, and other components necessary for a complete installation. Provide units that are listed and labeled as an assembly by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Basis-of-Design Manufacturer: Da-Lite, div. of Le Grand; www.legrandav.com.
2. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
3. Controls: Remote, key-operated, three-position control switch installed in recessed device box with flush cover plate matching other electrical device cover plates in room where switch is installed.
    a. Provide power supply for low-voltage systems if required.
    b. Provide locking cover plates for switches.
    c. Provide key-operated, power-supply switch.
    d. Provide infrared remote control consisting of battery-powered transmitter and receiver.
    e. Provide video interface control for connecting to projector. Projector provides signal to raise or lower screen.
4. Motor in Roller: Instant-reversing motor of size and capacity recommended by screen manufacturer; with permanently lubricated ball bearings, automatic thermal-overload protection, preset limit switches to automatically stop screen in up and down positions, and positive-stop action to prevent coasting. Mount motor inside roller with vibration isolators to reduce noise transmission.
5. Screen Mounting: Top edge securely anchored to rigid metal roller and bottom edge formed into a pocket holding a 3/8-inch- (9.5-mm-) diameter metal rod with ends of rod protected by plastic caps.
    a. Roller for motor in roller is supported by vibration- and noise-absorbing supports.

2.3 FRONT-PROJECTION SCREEN MATERIAL

A. Matte Reflective Viewing Surface: Peak gain of not less than 1.3, and half-gain angle of at least 40 degrees from the axis of the screen surface.

B. Material: Vinyl sheet.

C. Mildew-Resistance Rating: Zero or 1 when tested according to ASTM G 21.

D. Flame Resistance: Passes NFPA 701.

E. Flame-Spread Index: Not greater than 75 when tested according to ASTM E 84.

F. Seamless Construction: Provide screens, in sizes indicated, without seams.

G. Edge Treatment: Black masking borders.

H. Size of Viewing Surface: As indicated on drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install front-projection screens at locations indicated to comply with screen manufacturer's written instructions.

B. Install front-projection screens with screen cases in position and in relation to adjoining construction indicated. Securely anchor to supporting substrate in a manner that produces a smoothly operating screen with vertical edges plumb and viewing surface flat when screen is lowered.

1. Install low-voltage controls according to NFPA 70 and complying with manufacturer's written instructions.

a. Wiring Method: Install wiring in raceway except in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Use UL-listed plenum cable in environmental air spaces, including plenum ceilings. Conceal raceway and cables except in unfinished spaces.

2. Test electrically operated units to verify that screen controls, limit switches, closures, and other operating components are in optimum functioning condition.

3. Test manually operated units to verify that screen-operating components are in optimum functioning condition.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

SECTION 12 21 13 - HORIZONTAL LOUVER BLINDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Horizontal louver blinds with aluminum slats (WC-1 and WC-2).

B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood blocking and grounds for mounting horizontal louver blinds and accessories.
2. Sheet A0.2 on Drawings for blind colors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For horizontal louver blinds, include fabrication and installation details.

C. Samples: For each exposed product and for each color and texture specified, 12 inches long.

D. Samples for Initial Selection: For each type and color of horizontal louver blind.

1. Include Samples of accessories involving color selection.

E. Samples for Verification: For each type and color of horizontal louver blind indicated.

1. Slat: Not less than 12 inches long.
2. Tapes: Full width, not less than 6 inches long.
3. Horizontal Louver Blind: Full-size unit, not less than 16 inches wide by 24 inches long.
4. Valance: Full-size unit, not less than 12 inches wide.

F. Product Schedule: For horizontal louver blinds. Use same designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For horizontal louver blinds to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Horizontal Louver Blinds: Full-size units equal to 5 percent of quantity installed for each size, color, texture, pattern, and gloss indicated, but no fewer than two units.

1.6 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide horizontal louver blinds with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having

jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Flame-Resistance Ratings: Passes NFPA 701.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver horizontal louver blinds in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not install horizontal louver blinds until construction and wet-work and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where horizontal louver blinds are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.9 WARRANTY

A. Provide two (2) year warranty on materials and installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain horizontal louver blinds from single source from single manufacturer.

2.2 HORIZONTAL LOUVER BLINDS, ALUMINUM SLATS, WC-1 AND WC-2

A. WC-1: Existing louver blinds; to be relocated as indicated in Drawings.

B. WC-2: New louver blinds, to match existing.

1. Approved Manufacturers:

a. CACO Inc. Window Fashions; www.cacoinc.com.

b. Hunter Douglas; www.hunterdouglas.com.

c. Levelor Inc.; www.levelor.com.

d. Springs Window Fashions; www.springswindowfashions.com.

C. Slats: Aluminum; alloy and temper recommended by producer for type of use and finish indicated; with crowned profile and radius corners.

1. Width: 1 inch.

2. Thickness: Not less than 0.008 inch (0.203 mm).

3. Spacing: Manufacturer's standard.

4. Finish: Ionized antistatic, dust-repellent, baked polyester finish.

D. Headrail: Formed steel or extruded aluminum; long edges returned or rolled. Headrails fully enclose operating mechanisms on three sides.

1. Capacity: One blind(s) per headrail unless otherwise indicated.

2. Ends: Capped or plugged.

3. Manual Lift Mechanism:
    a. Lift Up/Pull Down Cordless Operation: Variable; stops blinds at user-selected position within blind full operating range.
4. Manual Tilt Mechanism: Enclosed worm-gear mechanism and linkage rod that adjusts ladders.
    a. Tilt: Full.
    b. Operator: Clear-plastic wand.
    c. Over-Rotation Protection: Manufacturer's detachable operator or slip clutch to prevent over rotation of gear.
5. Tilt-Operator Lengths: Manufacturer's standard.
6. Tilt-Operator Locations: Right side or left side of headrail, dependent on window access, unless otherwise indicated.
7. Integrated Headrail/Valance: Manufacturer’s standard.

E. Bottom Rail: Formed-steel or extruded-aluminum tube that secures and protects ends of ladders and lift cords and has plastic- or metal-capped ends.
1. Type: Top contoured to match crowned shape of slat.

F. Ladders: Evenly spaced across headrail at spacing that prevents long-term slat sag.
1. Type: Braided polyester jacket cord.

G. Valance: Manufacturer's standard.

H. Mounting Brackets: With spacers and shims required for blind placement and alignment indicated.
1. Type: Overhead.
2. Intermediate Support: Provide intermediate support brackets to produce support spacing recommended by blind manufacturer for weight and size of blind.

I. Side Channels and Perimeter Light Gap Seals, where required: Manufacturer's standard.

J. Colors, Textures, Patterns, and Gloss:
1. Slats: As selected by Architect from full range of manufacturer’s colors.
2. Components: Provide rails, ladders, and materials exposed to view matching or coordinating with slat color unless otherwise indicated.

2.3 HORIZONTAL LOUVER BLIND FABRICATION

A. Product Safety Standard: Fabricate horizontal louver blinds to comply with WCMA A 100.1 including requirements for corded, flexible, looped devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F:
1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which blind is installed less 1/4-inch per side or 1/2-inch total, plus or minus 1/8 inch. Length equal to head-to-sill dimension of opening in which blind is installed less 1/4 inch, plus or minus 1/8 inch.

C. Concealed Components: Non-corrodible or corrosion-resistant-coated materials.
1. Lift-and-Tilt Mechanisms: With permanently lubricated moving parts.

D. Mounting and Intermediate Brackets: Designed for removal and reinstallation of blind without damaging blind and adjacent surfaces, for supporting blind components, and for bracket positions and blind placement indicated.

E. Installation Fasteners: No fewer than two fasteners per bracket, fabricated from metal noncorrosive to brackets and adjoining construction; type designed for securing to supporting substrate; and supporting blinds and accessories under conditions of normal use.

F. Color-Coated Finish:

1. Metal: For components exposed to view, apply manufacturer's standard baked finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

A. Install horizontal louver blinds level and plumb, aligned and centered on openings, and aligned with adjacent units according to manufacturer's written instructions.

1. Install mounting and intermediate brackets to prevent deflection of headrails.

2. Install with clearances that prevent interference with adjacent blinds, adjacent construction, and operating hardware of glazed openings, other window treatments, and similar building components and furnishings.

3.3 ADJUSTING

A. Adjust horizontal louver blinds to operate free of binding or malfunction through full operating ranges.

3.4 CLEANING AND PROTECTION

A. Clean horizontal louver blind surfaces after installation according to manufacturer's written instructions.

B. Provide final protection and maintain conditions in a manner acceptable to manufacturer and Installer that ensures that horizontal louver blinds are without damage or deterioration at time of Substantial Completion.

C. Replace damaged horizontal louver blinds that cannot be repaired in a manner approved by Architect before time of Substantial Completion.

3.5 SCHEDULE

A. Provide horizontal louver blinds as indicated in Room Finish Schedule on the Drawings.

END OF SECTION

SECTION 12 24 13 - ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Manually operated roller shades with single rollers.

B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.

2. Section 07 92 00 "Joint Sealants" for sealing the perimeters of installation accessories for light-blocking shades with a sealant.

1.3 SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.

B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.

1. Motor-Operated Shades: Include details of installation and diagrams for power, signal, and control wiring.

C. Samples, Non-Shadeband Components:

1. Roller Shade Assembly: Full-size operating unit, not less than 16 inches wide by 36 inches long for each type of roller shade indicated.

2. For each exposed product and for each color and texture specified, 10 inches long.

3. Installation accessories.

D. Samples for Shadeband: For each type of roller shade.

1. Shadeband Material: Not less than 10 inches square. Mark interior face of material if applicable.

2. Product Schedule: For roller shades. Use same designations indicated on Drawings.

E. Qualification Data: For Installer.

1. Product Certificates: For each type of shadeband material.

2. Product Test Reports: For each type of shadeband material, for tests performed by manufacturer and witnessed by a qualified testing agency.

F. Operation and Maintenance Data: For roller shades to include in maintenance manuals.

G. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Roller Shades: Full-size units equal to 5 percent of quantity installed for each size, color, and shadeband material indicated, but no fewer than two units.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain roller shades from single source from single manufacturer.

B. Basis-of-Design Manufacturer: MechoShade Systems, Inc.; www.mechoshade.com.

C. Other Approved Manufacturers:

1. Draper, Inc.; www.draperinc.com.

2. Hunter Douglas Contract; www.hunterdouglasarchitectural.com.

3. Levolor, Inc.; www.levolor.com.

4. Lutron Electronics Co., Inc.; www.lutron.com.

2.2 MANUALLY OPERATED SHADES

A. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.

1. Bead Chains: Manufacturer's standard, either nickel-plated metal or stainless steel.

a. Loop Length: Full length of roller shade.

b. Limit Stops: Provide upper and lower ball stops.

2. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller shade weight and for lifting heavy roller shades.

a. Provide for shadebands that weigh more than 10 lb or for shades as recommended by manufacturer, whichever criterion is more stringent.

B. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

1. Single Roller Mounting Configuration:

a. Roller Drive-End Location: As indicated on Drawings, or as recommended by installer. Maintain consistent position of bead chain within rooms.

b. Direction of Shadeband Roll: Regular, from back (exterior face) of roller.

c. Shadeband-to-Roller Attachment: Manufacturer's standard method.

C. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.

D. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade that is operated by one roller drive-end assembly.

E. Shadebands: Refer to Shadebands Article below.

F. Installation Accessories:

1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

a. Shape: L-shaped.

b. Height: Manufacturer's standard height required to conceal roller and shadeband assembly when shade is fully open, but not less than 4 inches .

2. Exposed Headbox: Rectangular, extruded-aluminum enclosure including front fascia, top and back covers, endcaps, and removable bottom closure.

a. Height: Manufacturer's standard height required to enclose roller and shadeband assembly when shade is fully open, but not less than 4 inches .

3. Endcap Covers: To cover exposed endcaps.

4. Recessed Shade Pocket: Rectangular, extruded-aluminum enclosure designed for recessed ceiling installation; with front, top, and back formed as one piece, end plates, and removable bottom closure panel.

a. Height: Manufacturer's standard height required to enclose roller and shadeband assembly when shade is fully open, but not less than 4 inches .

b. Provide pocket with lip at lower edge to support acoustical ceiling panel.

5. Closure Panel and Wall Clip: Removable aluminum panel designed for installation at bottom of site-constructed ceiling recess or pocket and for snap-in attachment to wall clip without fasteners.

a. Closure-Panel Width: 2 inches or as indicated on Drawings.

6. Installation Accessories Color and Finish: As selected from manufacturer's full range.

G. Exposed Color and Finish: As selected by Architect from manufacturer's full range.

2.3 SHADEBAND MATERIALS

A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

B. Translucent Fabric: Woven fabric, stain and fade resistant.

1. Source: Roller shade manufacturer.
2. Type: Acrylic-coated fiberglass.
3. Weave: Twill.
4. Roll Width: Maximum available as appropriate for widths required.
5. Orientation on Shadeband: Railroaded.
6. Openness Factor: 1 percent.
7. Color: As selected by Architect from manufacturer's full range.

2.4 ROLLER SHADE FABRICATION

A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F:

1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch per side or 1/2-inch total, plus or minus 1/8 inch. Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch, plus or minus 1/8 inch.
2. Outside of Jamb Installation: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.

C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible, except as follows:

1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than 1:4, provide battens and seams at uniform spacings along shadeband length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.
2. Skylight Shades: Provide battens and seams at uniform spacings along shadeband as required to ensure shadeband tracking and alignment through its full range of movement without distortion or sag of material.
3. Railroaded Materials: Railroad material where material roll width is less than the required width of shadeband and where indicated. Provide battens and seams as required by railroaded material to produce shadebands with full roll-width panel(s) plus, if required, one partial roll-width panel located at top of shadeband.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.

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

3.2 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

B. Roller Shade Locations: At all exterior windows, or as indicated in Drawings.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller shade surfaces, after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated roller shades.

END OF SECTION

THIS PAGE INTENTIONALLY BLANK

CLACKAMAS COMMUNITY COLLEGE

ROOK HALL TI

PERMIT SET

APRIL 22, 2021

opsis